

RELATIONSHIPS BETWEEN THE RESOURCE
ATTRIBUTES AND PSYCHOLOGICAL OUTCOMES
PERCEIVED BY WILDERNESS RECREATIONISTS

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FINAL REPORT

RELATIONSHIPS BETWEEN THE RESOURCE ATTRIBUTES

AND

PSYCHOLOGICAL OUTCOMES PERCEIVED BY WILDERNESS RECREATIONISTS

(16-764-CA)
(16-646-CA)
(16-740-CA)

Submitted to

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March, 1980

PREFACE

This report is the final report for Rocky Mountain Forest and Range Experiment Station - Colorado State University cooperative research projects 16-646-CA, 16-740-CA, and 16-764-CA. The objectives of 16-646-CA and 16-740-CA were (1) to identify the physical resource attributes of wildland environments that users perceived either added to or detracted from the level of satisfaction obtained by their recreating in these environments, and (2) to identify the psychological outcomes (immediate benefits) that users perceived either added to or detracted from the level of satisfaction obtained by their recreating in these environments. The research objective of 16-764-CA was to identify the relationship between physical resource attributes and psychological outcomes identified in 16-646-CA and 16-740-CA.

In addition to reporting the findings from 16-646-CA (Weminuche Wilderness) and 16-740-CA (Eagles Nest Wilderness), results of another research effort focusing on physical resource attributes and psychological outcomes for the Rawah Wilderness, and funded by the McIntire-Stennis Forestry Research Program (USDA) at Colorado State University, are included.

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INTRODUCTION

The U.S. Forest Service and other natural resource management agencies have entered an era of comprehensive land and resource management planning. The Resource Planning Act (RPA) and the National Forest Management Act (NFMA) require periodic assessments of resource productive capability and require development of explicit middle- to long-range programs for resource management. The assessments and programs are to assess several factors including recreation demand and supply.

Techniques for assessing recreation activity demand have been under development, and sometimes used, during the past 20 years. Techniques for assessing recreation activity supply have been around somewhat longer, and have been used somewhat more. During the past few years there has been a recognition that an activity approach to assessing demand for and supply of recreation opportunities is inadequate. This has led to developing the recreation opportunity spectrum (ROS) concept and to developing a recreation opportunity planning (ROP) process. The ROS concept and ROP process rely on the notion that people participate in specific recreation activities, in specific environmental settings, to realize predictable recreation experiences. This suggests a clear linkage between activities, settings, and resulting experiences.

Development of the ROS concept and ROP process has relied on some research results of the last 20 years. But, the links between many activities, settings, and experiences have not been established. This means that use of the concept and implementation of the process occurs with less known reliability than is desirable. While the research reported here does not

focus on all activities, settings, and experiences, it does improve our knowledge of linkages among these factors for recreational use of high mountain wilderness areas.

Use of these areas is burgeoning and there is a growing interest among managers to manage wilderness resources to produce opportunities for specific kinds of recreation experiences. Since resource managers primarily manage the setting, they need to know which attributes of a recreation setting are perceived by users as important for a satisfying (quality) recreation experience.¹ Since examination of all high mountain wilderness setting and experience factors would be an enormous task, the research reported here only focuses on relations between physical resource attributes of the setting and psychological outcomes which characterize experience opportunities.²

The objectives of this study were to:

- (1) Identify the resource attributes which were perceived as adding to or detracting from satisfying recreation experiences in high mountain wilderness areas;
- (2) Identify the psychological outcomes which were perceived as adding to or detracting from satisfying recreation experiences in high mountain wilderness areas;
- (3) Determine the relationship between these perceptions of resource attributes and psychological outcomes.

¹Recreation setting attributes are defined as the social, managerial, and resource attributes of the area. Social attributes include such things as number and kinds of users, size of parties, mode of travel, and deprecative behavior; management attributes include such things as fees, permits, restrictions, visitor information, and the kind, amount and location of facilities; resource attributes include such things as topography, lakes, streams, fish, wildlife, forests and meadows.

²A recreation experience is the psychological and physiological result from engaging in a specific recreation activity within a specific recreation setting as defined by a group of psychological outcomes. B. L. Driver and P. J. Brown, Rocky Mountain Forest and Range Experiment Station, have developed scales for measuring 42 specific (20 general) types of outcomes that are commonly preferred by recreationists.

PROCEDURES

Subjects for the study were users of the Weminuche, Rawah, and Eagles Nest Wilderness Areas of Colorado. The primary data collection instrument was a mail questionnaire, although front-end interviews and backcountry interview-observations also were used to develop the content and the sample frame for the questionnaire.

Study Areas

The Weminuche, Rawah, and Eagles Nest Wilderness Areas (Figure 1) were selected for study because they represent different sizes and amounts of use (Table 1).

Table 1. Acreage and visitor days for each wilderness study area.

Wilderness	Acreage	1975 Visitor Days
Weminuche	405,031	140,000
Rawah	27,000	27,000
Eagles Nest	193,910	75,000

The Weminuche Wilderness is administered by the San Juan and Rio Grande National Forests. The Continental Divide bisects the wilderness and divides the administrative responsibilities. The area's configuration is roughly approximated by the triangle formed by Durango, Silverton, and Wolf Creek Pass in southwestern Colorado. It is a spectacular region of rugged mountain peaks, with an average elevation of 10,000 feet. There are approximately 250 miles of trails in the area and recreation use has been estimated as increasing at a rate of 19 percent per year.

The Rawah Wilderness is administered by the Arapaho-Roosevelt National Forest located in north-central Colorado. This wilderness, approximately

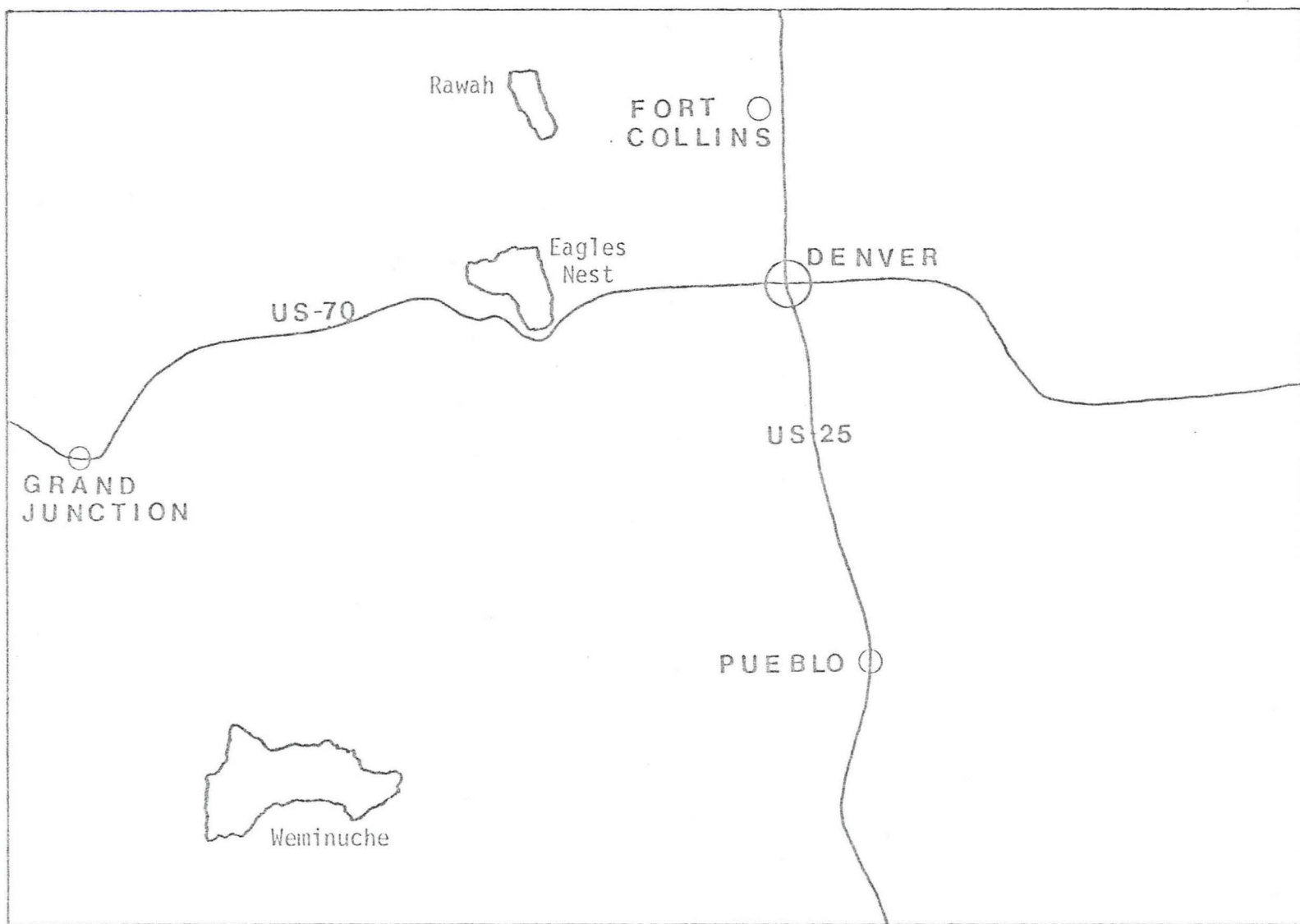


Figure 1. Rawah, Eagles Nest, and Weminuche Wilderness study areas in Colorado.

14 miles long and three miles wide, is characterized by its high alpine lakes, rugged peaks and ridges, glaciated valleys, and coniferous forests. The scenic beauty, the excellent fishing, and the proximity to the Denver-Fort Collins area makes it popular for recreation. Recreational use is concentrated around the more accessible lakes during the summer months with the majority of access occurring along three major trails.

The Eagles Nest Wilderness is administered by the White River National Forest. It is a 193,910 acre tract of land located along the spine of the Gore Mountain Range and is about a one-hour drive due west of Denver. The resort towns of Dillon and Vail are within two miles of the wilderness boundary and Interstate 70 between Dillon and Vail closely parallels the southern boundary of the area. Recreation use of the Eagles Nest has been steadily increasing over the past three years, and it is anticipated that the use of the Eagles Nest will increase dramatically.

Preliminary Interviews and Observations

Front-end Interviews

A front-end interview of area users (Appendix A) was administered by trained interviewers between late June and early September, 1977. Recreation use information and names and addresses were obtained as users were leaving the area. Users were asked if they were using the area for recreation. For those recreating, information such as activities, time and location of activity, most important activity, length of stay, and number of previous visits to the study area in the past twelve months was obtained. Observations were made of the vehicle type, number of people in party, and age and sex of party members.

Interviews were made at trailheads and along roadsides. One member of each party was approached and an interview was requested. For roadside interviews, the interviewer alternated interviewing the driver, right-side

passenger, and backseat passenger, when possible. At trailheads, the interviewers were instructed to interview a proportionate number of older versus younger users and male versus female users.

Front-end interviews usually took 2-3 minutes to administer. Approximately 5 percent of the users refused to be interviewed, while less than 1 percent refused or were not able to provide their name and address; e.g., some people did not know where they would be living in the fall of 1977.

The sampling scheme for the front-end interview used interview sites and weekday-weekend strata, and time of day clusters. Sampling was proportionate to historic use at each interview site. A normal interview period at each site was three hours in one of four blocks: 9 a.m. - 12 p.m., 11 a.m. - 2 p.m., 2 p.m. - 5 p.m., or 4 p.m. - 7 p.m. Users passing through each interview site during each time block were a cluster and the interviewer tried to interview all members of each sample cluster.

Backcountry Interviews and Observations

Backcountry interviews and observations were made by trained participant observers to obtain behavioral and preference information from users in a situation in which they did not know they were participating in the study. Each participant observer was attempting to answer questions listed on a backcountry observation form kept in his backpack (Appendix B). The questions were about the most satisfying and dissatisfying points of users' trips, their perception of recreation use in the area, their reasons for visiting the area, and features of the physical resource setting which they valued. Observations were made of size of party, equipment carried, and other party characteristics. After leaving the user, the participant observer recorded all relevant information.

Backcountry interviewing did not follow a rigid sampling plan. As the summer progressed, front-end interviewers were informed of where and when they could go into the backcountry. There were 25, 13, and 22 man-days of backcountry interviewing in the Weminuche, Rawah, and Eagles Nest Wilderness Areas, respectively.

Mail Questionnaire

A questionnaire was developed for each study area (Appendix C). The mail questionnaires were composed of: (1) questions about the summer trip(s) into the study area, (2) scaled items about the psychological outcomes perceived by users to add to or detract from their satisfaction, (3) scaled items about the physical resource attributes perceived by users to add to or detract from their satisfaction, (4) questions about wilderness area management, and (5) questions about socioeconomic characteristics of users. The questionnaires differed only to the extent that there were some unique resource attributes in each study area and that management concerns slightly differed for each study area.

Subjects responding to the questionnaires were users of the areas who were contacted during front-end interviewing. Our analysis of their responses has focused on the physical resource attribute and psychological outcome items.

Sample and Questionnaire Administration

Potential respondents to the questionnaire were members of the sample frame of names obtained during front-end interviewing. Only those area users actually traveling into the wilderness were included. The Weminuche Wilderness questionnaire was sent to 385 users, the Rawah Wilderness questionnaire was sent to 262 users, and the Eagles Nest Wilderness questionnaire was sent to 408 users.

The questionnaires were distributed through the postal system in December-January, 1977-78. The questionnaires for each study area were mailed on the same day. Three weeks after the first mailing, a second mailing was made to those respondents who had not responded. Three weeks after the second mailing, a third, and final mailing was made to increase the response rate.

Content Development

The outcome items were initially obtained through "brainstorming" and a review of literature. The first task was to identify domains (constructs) or general themes of what people desired from their wilderness experience. The second task was to develop a set of outcome statements (items) which would comprehensively describe each of the domains.³

Three prior research efforts served as pilot projects. A 1975 Rawah Wilderness users' study used 71 outcome items which theoretically tapped eight domains.⁴ A 1976 Flat Tops Wilderness users' study further refined the 71 outcome items previously used in the 1975 Rawah study and used 73 resource attribute items (see Appendix D for Flat Tops Office Report). A 1976 Indian Peaks Backcountry users' study⁵ also used 73 resource attribute items.⁶

³A domain is a broad, general construct which can be described by one or more groups of related items.

⁴^{Waves}Brown, P. J. and G. E. Haas. In Press. Wilderness Recreation Experiences: The Rawah Case. Journal of Leisure Research.

⁵Haas, G. E., M. J. Manfredo, and P. J. Brown. 1977. Identifying Resource Attributes Providing Opportunities for Dispersed Recreation. Report to USDA Forest Service-RMS.

⁶The Indian Peaks Backcountry area was entered into the National Wilderness Preservation system in September, 1978.

Analysis

The three objectives of the study required two principal kinds of data analysis. A third kind of analysis was used in describing the users of the study areas. Table 2 shows the research tasks, statistical analyses, and computer programs.

Cluster analysis was used to identify physical resource attributes and psychological outcomes. It is a means of examining a matrix of inter-correlations among responses to a set of items in order to group the items. Each cluster (or group) consists of items that correlate highly with one another and that have comparatively low correlations with items in other clusters (Nunnally, 1967). The key-cluster factoring program of the BC-TRY cluster analysis system was used in this study.⁷ Key-cluster factoring begins by creating a correlation matrix from which "pivot variables" are identified and used in building the clusters. These pivot variables are selected based on their pattern of intercorrelations with the entire variable set. Clusters are built (that is, variables added to each pivot variable) until an established level of variance (97 percent) is explained by the extracted clusters (see footnote 7).

Multiple regression analysis was used to identify the relationship between physical resource attributes and psychological outcomes. Multiple regression is a statistical procedure designed for identifying the relationship between a dependent (criterion) variable and a set of independent (predictor) variables. In using multiple regression, one tests the null hypothesis that there is no linear relationship between a dependent variable and a set of independent variables.⁸ Specifically, the regression

⁷Tryon, R. C. and D. E. Bailey. 1970. Cluster Analysis. McGraw-Hill, N.Y.

⁸Nie, N. H., C. H. Hull, G. J. Jiem, K. Steinbrenner, and D. H. Bent. 1975. Statistical Package for the Social Sciences. 2nd Ed. McGraw-Hill, N.Y.

Table 2. Statistical analyses and computer programs used for each research task.

Tasks	Statistical Analysis	Computer Program
Identification of physical resource attributes	Cluster Analysis	BC-TRY (V-Analysis)
Identification of psychological outcomes	Cluster Analysis	BC-TRY (V-Analysis)
Relationship between resource attributes and psychological outcomes	Regression Analysis	SPSS
General description of wilderness visitors	Frequencies/Percentages	SPSS

subroutine (SPSS) identified the relationship between each psychological outcome (dependent variable) and the physical resource attributes (independent variables).

RESULTS

The sample sizes and rates of response for the Weminuche, Rawah, and Eagles Nest Wilderness study areas varied. Respectively, they were 312 (86 percent), 211 (86 percent), and 268 (72 percent).

Description of Wilderness Users

Weminuche Wilderness users averaged 33 years old, had more than 15 years of formal education, and often were from communities of 100,000+ population (42 percent). The average size of party was 4.4 persons and length of stay was 3.4 nights. The most important activities were hiking (42 percent), camping (24 percent), and fishing (11 percent), and most of the users (69 percent) visited the area only once during the summer of 1977.

Rawah Wilderness users averaged 30 years old, had more than 15 years of formal education, and often were from communities of 25,000-100,000 population (52 percent). The average size of party was 4.0 persons and length of stay was 2.3 nights. The most important activities were camping (38 percent), hiking (37 percent), and fishing (9 percent), and most of the users (62 percent) visited the area only once during the summer of 1977.

Eagles Nest Wilderness users averaged 33 years old, had about 16 years of formal education, and often were from communities of 100,000+ population (54 percent). The average size of party was 3.6 persons and length of stay was 1.4 nights. The most important activities were hiking (50 percent), camping (21 percent), and fishing (12 percent), and most of the users visited the area more than once during the summer of 1977.

Users of the Weminuche, Rawah, and Eagles Nest study areas were similar in years of education and most important activities. In contrast, Rawah Wilderness users generally were younger and came from medium-sized communities; Eagles Nest Wilderness users generally were in smaller parties, stayed for a shorter time, and visited the area more often during the summer; Weminuche Wilderness users generally were in larger parties and visited the area for a longer time.

Physical Resource Attributes

With minor exceptions in the items which are included, the same eight physical resource attribute domains were identified for Weminuche, Rawah, and Eagles Nest Wilderness users (Table 3). For the Weminuche, the water-related, vegetation, and attractive topography domains had the highest means (perceived to contribute most to satisfaction), while the bad weather and nuisance topography domains had the lowest means (perceived to contribute least to satisfaction). For the Rawah, the water-related, vegetation, large wildlife, and attractive topography domains had the highest means (perceived to contribute most to satisfaction), while the bad weather and nuisance topography domains had the lowest means (perceived to contribute least to satisfaction). For the Eagles Nest, the water-related, large wildlife, and attractive topography domains had the highest means (perceived to contribute most to satisfaction), while the bad weather and nuisance topography domains had the lowest means (perceived to contribute least to satisfaction). For all but one domain in one area, alpha reliabilities exceeded .70.

Table 3. Eight physical resource attribute domains and items described by mean score, standard deviation, and domain's reliability for each wilderness study area.

Physical Resource Attribute Domains and Items	Wilderness Study Area					
	Weminuche (N=312)		Rawan (N=211)		Eagles Nest (N=268)	
	Mean ^a	Stand. Dev.	Mean ^a	Stand. Dev.	Mean ^a	Stand. Dev.
1. Water Related	3.3	0.9	3.2	1.0	3.2	1.1
Cascading streams	3.3	0.9	3.0	1.1	3.0	1.0
Meandering streams	-	-	3.3	0.9	3.3	1.0
Mountain springs	3.2	1.0	3.0	1.1	2.9	1.3
Isolated lakes	3.4	1.0	3.4	0.9	3.1	1.3
Waterfalls	3.4	0.9	3.1	1.1	3.2	1.2
Natural lakes and ponds	3.4	0.8	3.5	0.7	3.4	0.9
	.71 ^b		.85 ^b		.79 ^b	
2. Vegetation	3.1	1.0	3.0	1.1	2.8	1.2
Alpine meadows	3.2	1.0	3.3	1.0	2.9	1.2
Wildflowers	3.4	0.8	3.2	1.0	3.2	1.0
Evergreen forests	3.3	0.9	3.1	1.0	2.9	1.1
Alpine or tundra vegetation	2.9	1.2	2.8	1.2	2.5	1.3
Numerous plant species	2.8	1.2	2.6	1.3	2.4	1.4
Aspen groves	3.0	1.0	2.8	1.1	2.8	1.2
Virgin forests	3.4	0.8	3.2	1.0	3.1	1.2
	.79		.91		.83	
3. Attractive Topography	3.0	1.3	2.7	1.3	2.3	1.4
Steep hillsides	2.5	1.5	2.4	1.3	2.2	1.5
Barren, rock peaks	3.0	1.3	2.8	1.1	2.7	1.3
Unusually shaped rocks	2.6	1.3	2.2	1.4	2.0	1.5
Rugged terrain	3.1	1.2	2.3	1.3	2.7	1.2
Areas above timberline	3.3	1.0	3.0	1.2	2.4	1.5
Lofty ridges	3.3	1.0	3.0	1.2	2.9	1.2
Snowfields	-	-	2.7	1.3	2.0	1.5
Evidence of glacial activity	-	-	2.4	1.4	1.9	1.6
Gently rolling topography	-	-	-	-	2.0	1.5
Rock pinnacles	2.9	1.1	-	-	-	-
Deep gorges	3.0	1.6	-	-	-	0
	.77		.90		.84	
4. Large Wildlife	2.7	1.5	2.7	1.5	2.3	1.7
Elk	-	-	2.6	1.5	2.2	1.7
Bighorn sheep	2.6	1.7	2.3	1.6	2.2	1.8
Deer	3.1	1.2	2.8	1.3	2.4	1.6
Mountain goats	2.5	1.6	-	-	-	-
	.84		.89		.90	
5. Small Wildlife	2.7	1.3	2.5	1.4	2.2	1.5
Beaver	2.7	1.4	2.6	1.5	2.3	1.6
Variety of birds	2.7	1.2	2.4	1.3	2.2	1.4
Ptarmigan	2.5	1.5	2.4	1.5	2.0	1.6
Beaver ponds	-	-	2.6	1.4	-	-
Small mammals	2.9	1.1	2.7	1.2	2.6	1.3
Eagles	2.9	1.4	-	-	2.1	1.7
	.76		.91		.79	
6. Fish Related	2.3	1.6	2.0	1.6	1.8	1.7
Good fishing streams	2.4	1.6	2.0	1.7	1.7	1.7
Rainbow trout	2.3	1.6	2.0	1.6	1.3	1.7
Good fishing lakes	2.4	1.6	2.2	1.7	2.0	1.7
Cutthroat trout	2.0	1.7	1.3	1.6	1.6	1.7
Naturally reproducing fish populations	2.4	1.6	2.2	1.6	2.0	1.7
	.84		.92		.85	
7. Nuisance Topography	1.4	1.9	1.4	1.7	1.1	1.7
Rock slides	1.4	2.0	1.4	1.7	1.2	1.7
Boggy areas	0.6	2.1	1.0	1.8	0.6	1.8
Boulder fields	2.0	1.5	1.3	1.6	1.6	1.6
Avalanche paths	1.5	1.8	-	-	-	-
	.79		.80		.59	
8. Bad Weather	0.7	2.1	0.3	1.9	0.1	1.7
Foil and sleet storms	0.4	2.2	0.0	2.0	0.2	1.7
Unpredictable weather	1.0	1.9	0.6	1.8	0.6	1.7
Windy areas	-	-	0.3	2.0	0.0	1.7
	.83		.84		.62	

^aA nine-point response scale was used where +4 equalled most strongly added to satisfaction and -4 equalled most strongly detracted from satisfaction.

^bReliability coefficient.

Psychological Outcomes

The same ten psychological outcome domains were identified for Weminuche, Rawah, and Eagles Nest users (Table 4). For all three areas, the relationships with nature, escape physical pressure, and exercise/physical fitness domains had the highest means (perceived to contribute most to satisfaction), while the avoid risks, meeting/observing other people, and risk-taking domains had the lowest domain means (perceived to contribute least to satisfaction). For all domains in all areas alpha reliabilities exceeded .65.

Attributes and Outcomes

Physical resource attributes related to psychological outcomes were identified using multiple regression (Tables 5, 6, and 7). In these tables, only the statistics for attributes which were significantly ($p < .05$) predictive of an outcome are reported.

For the Weminuche there was a significant relationship between one or more resource attributes and five outcomes (Table 5). The vegetation and bad weather attributes were predictor variables for three outcomes, while the attractive topography and fish-related attributes were predictor variables for one outcome. Several of the physical resource attributes and psychological outcomes which were identified were not related.

For the Rawah there was a significant relationship between one or more resource attributes and six outcomes (Table 6). The fish-related attribute was a predictor variable for three outcomes, the vegetation attribute was a predictor variable for two outcomes on the attractive topography and bad weather attributes were predictor variables for one outcome. Several of the physical resource attributes and psychological outcomes which were identified were not related.

Table 4. Ten psychological outcome domains and items described by mean score, standard deviation, and domain's reliability for each wilderness study area.

Psychological Outcome Domains and Items	Wilderness Study Area					
	Weminuche (N=312)		Rawah (N=211)		Eagles Nest (N=268)	
	Mean ^a	Stand. Dev.	Mean ^a	Stand. Dev.	Mean ^a	Stand. Dev.
1. Relationships with Nature	3.2	0.9	3.1	0.9	2.3	1.2
Enjoying the scenery	3.6	0.7	3.5	0.7	3.4	0.7
Enjoying the sights and sounds of nature	3.6	0.7	3.6	0.7	3.5	0.8
Gaining an appreciation of nature	3.1	1.1	3.0	1.1	1.9	1.7
Being close to nature	3.4	0.8	3.3	0.9	3.1	1.0
Learning more about nature	2.7	1.1	2.6	1.2	2.3	1.3
Experiencing new and different things	2.9	1.2	2.8	1.1	2.5	1.3
Discovering something new	3.0	1.0	2.9	1.1	2.6	1.3
	.87 ^b		.90 ^b		.90 ^b	
2. Escape Physical Pressure	2.9	1.2	2.9	1.2	2.7	1.3
Experiencing the peace and calm	3.6	0.7	3.5	0.8	3.4	1.0
Getting away from other people	3.1	1.2	3.0	1.2	2.8	1.3
Feeling isolated	2.3	1.5	2.3	1.4	1.9	1.5
Being alone	2.2	1.6	2.3	1.6	1.9	1.7
Being away from crowds of people	3.4	1.0	3.3	1.3	3.2	1.2
Being away from the noise back home	2.8	1.3	2.8	1.2	2.5	1.4
Having a change from your everyday life	3.1	1.0	3.2	0.8	2.9	1.1
	.87		.84		.87	
3. Exercise/Physical Fitness	2.6	1.3	2.7	1.1	2.7	1.2
Getting exercise	2.8	1.2	2.8	1.1	2.9	1.2
Trying to keep physically fit	2.3	1.4	2.5	1.2	2.5	1.3
Feeling good after being physically active	2.8	1.2	2.7	1.1	2.7	1.2
	.82		.86		.81	
4. In-Group Relations	2.1	1.5	2.2	1.4	2.0	1.5
Doing something with your family	2.0	1.7	2.1	1.6	1.8	1.7
Being with another member of the family	2.0	1.6	2.1	1.6	1.7	1.6
Being with other members of your group	2.2	1.4	2.2	1.3	2.2	1.5
Doing things with your companions	2.4	1.3	2.5	1.2	2.4	1.3
Being with people having similar values	2.1	1.5	2.0	1.5	2.0	1.5
	.83		.78		.83	
5. Freedom	1.9	1.6	1.9	1.6	1.7	1.6
Doing things your own way	1.9	1.5	2.0	1.4	1.6	1.5
Being obligated to no one	1.6	1.7	1.7	1.7	1.5	1.7
Feeling free from society's restrictions	2.3	1.5	2.2	1.6	2.0	1.5
	.79		.74		.80	
6. Achievement	1.6	1.4	1.6	1.4	1.4	1.4
Developing your skills and ability	1.9	1.4	1.9	1.3	1.6	1.4
Applying skills	2.1	1.3	2.0	1.4	1.7	1.4
Teaching your outdoor skills to others	1.2	1.4	1.1	1.3	1.0	1.4
Sharing your knowledge with others	1.4	1.3	1.3	1.7	1.2	1.3
	.86		.86		.87	
7. Reflect on Personal Values	1.3	1.5	1.3	1.4	1.2	1.5
Learning more about yourself	1.7	1.5	1.7	1.3	1.5	1.4
Thinking about your personal values	1.4	1.5	1.5	1.4	1.3	1.5
Thinking about your future	0.7	1.4	0.8	1.4	0.8	1.4
Reflecting on your religious or other spiritual values	1.4	1.7	1.2	1.6	1.0	1.6
	.76		.73		.79	
8. Risk Taking	0.2	1.7	0.1	1.0	0.3	1.4
Taking risks	0.5	1.8	0.5	1.8	0.6	1.5
Chancing dangerous situations	0.4	1.9	0.3	1.8	0.5	1.5
Feeling frightened	-0.2	1.6	0.4	1.5	-0.1	1.2
Not knowing for sure where you are	0.0	1.6	-0.1	1.5	0.2	1.4
	.79		.80		.81	
9. Avoid Risks	0.0	1.5	0.1	1.5	0.3	1.4
Being sure of what will happen to you	0.1	1.5	0.2	1.5	0.3	1.2
Avoiding the unexpected	0.0	1.4	0.1	1.5	1.3	1.5
	.70		.71		.65	
10. Meeting/Observing Other People	0.2	1.8	-0.1	1.8	0.1	1.6
Meeting other people in the area	-0.2	1.9	-0.4	2.1	-0.3	1.3
Seeing other people in the area	-0.9	1.9	-1.2	1.9	-0.6	1.7
Being near others who could help if you need them	0.5	1.6	0.2	1.6	0.4	1.4
Being near considerate people	1.2	1.5	1.3	1.7	1.1	1.6
	.80		.82		.81	

^aA nine-point scale was used where +4 equalled most strongly added to satisfaction and -4 equalled most strongly detracted from satisfaction.

^bReliability coefficient.

Table 5. Physical resource attributes related to psychological outcomes for the Weminuche Wilderness users.^a

Psychological Outcomes	Physical Resource Attributes	β	R^2	R	F
Relationships with Nature	Vegetation	.48	.23 (.23)	.48 (.48)	62.453
Escape Physical Pressure	Attractive Topography	.27	.21	.46	32.900
	Vegetation	.26	.21 (.24)	.46 (.49)	
Reflect on Personal Values	Bad Weather	.23	.05 (.05)	.23 (.23)	11.462
Risk-Taking	Bad Weather	.30	.09 (.09)	.30 (.30)	21.043
In-Group Relations	Vegetation	.25	.08	.29	10.386
	Fish-Related	.17	.06	.25	
	Bad Weather	-.16	.01 (.13)	-.10 (.36)	

^aOnly relationships significant at $p < .05$ are shown.

Table 6. Physical resource attributes related to psychological outcomes for the Rawah Wilderness users.^a

Psychological Outcomes	Physical Resource Attributes	β	R^2	R	F
Relationships with Nature	Vegetation	.66	.37	.61	49.031
	Fish-Related	-.14	.01 (.40)	.09 (.63)	
Escape Physical Pressure	Attractive Topography	.45	.20 (.20)	.45 (.45)	34.549
Reflect on Personal Values	Fish-Related	.22	.05 (.05)	.22 (.22)	7.977
Risk-Taking	Bad Weather	.27	.07 (.07)	.27 (.27)	12.089
Exercise/Physical Fitness	Vegetation	.47	.22 (.22)	.47 (.47)	41.930
Avoid Risk	Fish-Related	.18	.03 (.03)	.18 (.18)	4.893

^aOnly relationships significant at $p < .05$ are shown.

Table 7. Physical resource attributes related to psychological outcomes for the Eagles Nest users.^a

Psychological Outcomes	Physical Resource Attributes	β	R^2	R	F
Relationships with Nature	Vegetation	.62	.44	.66	47.520
	Large Wildlife	-.24	.07	.26	
	Small Wildlife	.23	.22	.47	
			(.45)	(.67)	
Escape Physical Pressure	Water-Related	.45	.20	.45	45.252
			(.20)	(.45)	
Reflect on Personal Values	Vegetation	.29	.26	.51	34.613
	Attractive Topography	.27	.25	.50	
			(.28)	(.53)	
In-Group Relations	Small Wildlife	.48	.04	.21	6.348
	Large Wildlife	-.25	.01	.08	
	Nuisance Topography	-.19	.10	-.09	
			(.10)	(.31)	
Exercise/Physical Fitness	Attractive Topography	.32	.22	.47	23.538
	Vegetation	.31	.22	.47	
	Fish-Related	-.22	.01	.04	
			(.29)	(.54)	
Achievement	Fish-Related	.30	.09	.30	17.684
			(.09)	(.30)	

^aOnly relationships significant at $p < .05$ are shown.

For the Eagles Nest there was a significant relationship between one or more resource attributes and six outcomes (Table 7). The vegetation attribute was a predictor variable for three outcomes; the attractive topography, fish-related, large wildlife, and small wildlife attributes were predictor variables for one outcome. Several of the physical resource attributes and psychological outcomes which were identified were not related.

In general, there were significant relationships between several of the physical resource attributes and the psychological outcomes (Table 8). The vegetation, attractive topography, and fish-related attributes were significant predictors for at least one outcome in each study area. The bad weather attribute was a significant predictor for at least one outcome in two study areas; and the large wildlife, small wildlife, nuisance topography, and water-related attributes were predictor variables for at least one outcome in one study area.

The relationships with nature, escape physical pressure, reflect on personal values, risk taking, in-group relations, and exercise/physical fitness psychological outcomes were more related to physical resource attributes than achievement, avoid risks, freedom, and meeting/observing other people. These outcomes which are not related to physical characteristics of the setting might be related to social or managerial aspects of the recreational setting.

DISCUSSION

One purpose of this research was to identify relationships among physical resource attributes of the recreational setting and psychological outcomes perceived to contribute to the recreational experience for participants in one set of recreational activities. A second purpose was to identify some physical resource factors which might be used in

Table 8. Summary of tables 5, 6, and 7 showing physical resource attributes related to psychological outcomes for users of the three wilderness areas.^a

Psychological Outcomes	Physical Resource Attributes							
	Vegetation	Attractive Topography	Fish Related	Bad Weather	Large Wildlife	Small Wildlife	Nuisance Topography	Water Related
Relationships with nature	W,R,E		R	.	E			
Escape physical pressure	W,R,E	W,R,E						E
Reflect on personal values	E		R	W				
Risk-taking				W,R				
In-group relations	W		W		E	E	E	
Exercise/physical fitness		E	E					
Achievement			E					
Freedom								
Avoid risk			R					
Meeting/observing other people								

^aThe areas are coded in the table as: Weminuche - W, Rawah - R, and Eagles Nest - E

assessment of the productivity of land and water resources in providing recreational opportunities. Results of this research meet these purposes.

Eight general physical resource attributes of the recreational setting were identified for each study area. For all areas the eight attributes were perceived to add to or detract from obtaining a satisfying recreational experience in the same way. Water-related features of the setting were always perceived to add the most to satisfaction, followed by the vegetation, attractive topography, large wildlife, small wildlife, fish-related, nuisance topography, and bad weather attributes.

Ten psychological outcome domains were identified for each study area. In order of their perceived contribution to a satisfying experience they were: escape physical pressure and exercise/physical fitness (strongly added); in-group relations, freedom, and achievement (moderately added); reflect on personal values (slightly added); risk taking, avoid risks and meeting/observing other people (neither added to nor detracted from).

All of the physical resource attributes were significantly related to one or more of the psychological outcomes when the three study areas are considered together. These attributes had more relationships to escape, nature and in-group affiliation outcomes than to other outcomes. They were not related to freedom, a more social and managerial setting dependent outcome, and to meeting/observing other people, a more social setting dependent outcome.

These results have suggested the following conclusions to us.

- (1) Resource attributes which are perceived as contributing to satisfying recreation experiences can be identified, and the perception of their importance in providing satisfying experiences is relative stable across the high mountain wilderness areas studied.

- (2) Psychological outcomes which are perceived as contributing to satisfying recreation experiences can be identified and are relatively stable across the high mountain wilderness areas studied.
- (3) There is a significant relationship between several resource attributes and psychological outcomes. Only a few of these relationships are stable across the high mountain wilderness areas studied.

The results suggest to us that recreationists engage in a particular activity in a specific setting to realize certain outcomes. For instance, wilderness recreation in areas of rugged, attractive terrain and of diverse vegetation is related to obtaining relationships with nature and escape from physical/social pressure. However, the results are not as definitive regarding this notion as we would have liked. While many factors might have contributed to this finding, we suspect that the generality of the activity (wilderness recreation) might be an important factor. Also, the recreational setting is composed of social and managerial attributes in addition to the physical resource attributes. These other attributes likely would be more related to some outcomes than are physical resource attributes.

The results of this research have led to identifying three physical resource attributes which might be inventoried for resource assessments. The vegetation attribute was related to the relationships with nature and escape physical pressures outcomes. The attractive topography attribute was related to the escape physical pressures outcome. The bad weather attribute was related to the risk-taking outcome for users of the two areas where the risk-taking outcome was identified. To identify areas providing opportunity for these outcomes, specific characteristics of these attributes might be inventoried and evaluated for their ability to provide different recreation opportunities.

The findings suggest to us some ideas for future research. To better define relationships among activities, settings, and experiences it might be necessary to more specifically define the relevant activities, resource attributes and outcomes. Incorporation of social and managerial attributes into the analysis also should be useful. To be useful in resource assessments the resource attributes need to be defined more specifically so that one knows precisely what to inventory.

This research has provided the first systematic look at the relationship among recreation activities, physical resource attributes of the recreational setting, and psychological outcomes realized from recreational engagement. While it has not shown a definite relationship among all elements of these components of a recreation opportunity, it does support the notion that these components are linked in the minds of recreationists.

Appendix A: Front-end interview form.

IDENT. _____ (75-80)

INTERVIEWER _____

STUDY AREA _____ (1) 4. TIME OF WEEK (circle): WEEKDAY WEEKEND HOLIDAY (6)
 STATION _____ (2) 5. TRIP PURPOSE (circle): REC. NON-REC. TO-FROM REC. (7)
 DATE _____ (3-5) 6. TOTAL TIME SPENT IN AREA _____ HRS. (8-10)

TIME SPENT IN AREA?

A	B	C	D	E	F	G	H	I	J	K	L	M	N
(11-13)	(14-16)	(17-19)	(20-22)	(23-25)	(26-28)	(29-31)	(32-34)	(35-37)	(38-40)	(41-43)	(44-46)	(47-49)	(50-52)
O	P	Q	R	S	T	U	V	W	X	Y	Z		
(53-55)	(56-58)	(59-61)	(62-64)	(65-67)	(68-70)	(71-73)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)		

IDENT (75-80) + CARD 2

ACTIVITY	ZONES					ACTIVITY	ZONES				
1. BOATING	(16)	(17)	(18)	(19)	(20)	11. GATHERING FOREST PRODUCTS	(66)	(67)	(68)	(69)	(70)
2. RAFTING	(21)	(22)	(23)	(24)	(25)	12. HIKING/WALKING (1D 75-80/C3)	(1)	(2)	(3)	(4)	(5)
3. CAMPING NEAR AUTO	(26)	(27)	(28)	(29)	(30)	13. TECHNICAL MT. CLIMBING	(6)	(7)	(8)	(9)	(10)
4. CAMPING AWAY FROM AUTO	(31)	(32)	(33)	(34)	(35)	14. HORSEBACK RIDING	(11)	(12)	(13)	(14)	(15)
5. FISHING	(36)	(37)	(38)	(39)	(40)	15. HUNTING	(16)	(17)	(18)	(19)	(20)
6. PICNICKING	(41)	(42)	(43)	(44)	(45)	16. NATURE STUDY	(21)	(22)	(23)	(24)	(25)
7. AUTO DRIVING	(46)	(47)	(48)	(49)	(50)	17. PHOTOGRAPHY	(26)	(27)	(28)	(29)	(30)
8. 4 WHEEL DRIVING	(51)	(52)	(53)	(54)	(55)	18. SKIING	(31)	(32)	(33)	(34)	(35)
9. MOTORCYCLING	(56)	(57)	(58)	(59)	(60)	19. SNOWSHOEING	(36)	(37)	(38)	(39)	(40)
10. BICYCLING	(61)	(62)	(63)	(64)	(65)	20. OTHER	(41)	(42)	(43)	(44)	(45)

WHICH OF THE ABOVE ACTIVITIES WAS THE MOST IMPORTANT IN COMING TO THIS AREA? _____ (46-47)

DID YOU ENTER THE WILDERNESS AREA? YES NO (48)

PREVIOUS VISITS TO THE AREA? # _____ (49-50)

GROUP COMPOSITION: FAMILY _____ FAMILY & FRIENDS _____ ALONE _____ (51)
 FRIENDS _____ ORGANIZED GROUP _____

ADDRESS OF PERMANENT RESIDENT:

NAME _____ (2-29) C4 (ID 75-80)

STREET ADDRESS _____ (2-35) C5 (ID 75-80)

CITY, STATE, ZIP _____ (2-35) C6 (ID 75-80)

a. TYPE OF VEHICLE (circle one): CAR TRUCK VAN CAMPER MOTOR HOME MOTORCYCLE JEEP (52)

b. UTILITY TRAILER CAMPER TRAILER (53)

TOTAL # OF PEOPLE _____ (54-55)

AGES								# CARS PASSED
-15		16-20		21-45		+ 45		
M	F	M	F	M	F	M	F	
(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64-65)

TIME OF DAY? _____ (66-67)

IDENT (75-80)

Appendix B: Backcountry interview form.

Interviewer: _____

OBSERVATIONS

Study Area: _____ Zone: _____ Section: _____

Date: _____ WD _____ WE/H _____ Time: _____

No. of People in Party by Age Group:

<u>-15</u>	<u>16-20</u>	<u>21-45</u>	<u>+45</u>	<u>Total</u>
------------	--------------	--------------	------------	--------------

Party composition by sex: No. Males _____ No. Females _____

Mode of travel: (circle) horse hike hike with pack animal

Equipment (Fishing, hunting, cameras, etc.): _____

Violations of Rules & Regulations Specific to Study Area (e.g., open fires, dogs off leash, camping in restricted zone, cutting live vegetation, etc.).

Other Observations (General use level at time of interview, weather, etc., use on or off trail, party in transit or set-up, etc.):

PERSONAL INTERVIEW

Major Activities Pursued: _____
(circle the major activity)

Years Engaged in the Major Activity: _____

Length of Stay (Hours & Days) So Far _____ Additional Planned _____

Travel Route _____

Two High Points of trip so far (Most satisfying) _____

Low Points of trip (Problems - Dissatisfactions) _____

Perceptions of: Use Levels this visit _____

Total impact of past use _____

Mgmt. Actions (Good & Bad) _____

Mgmt. Recommendations _____

Reasons for visit (type of satisfaction expected and valued; PROBE for specifics)

Specific features of physical setting expected and valued (PROBE for specifics)

Appendix C: Mail questionnaires.

College of Forestry and Natural Resources
Department of Recreation Resources

Colorado State University
Fort Collins, Colorado
80523

Dear Weminuche User:

We appreciated the cooperation you gave us last summer when we interviewed you briefly in the Weminuche Wilderness Area near Durango, Colorado. Your name has been selected randomly from those interview records, and we need your help again.

Would you please take about 15 minutes to complete the enclosed questionnaire. It was designed to find out more about the types of recreation opportunities that are preferred by users of the area. The information is being collected to help guide future management decisions.

A relatively small sample of people were selected to get the questionnaire, so your response is indeed important. Please complete the questionnaire as soon as possible, fold it, and mail it in the postage-paid envelope provided. Your answer will be kept confidential. Thank you in advance for your help.

Sincerely,

A handwritten signature in dark ink, appearing to read "Glenn E. Haas", written in a cursive style.

Glenn E. Haas
Research Associate

GEH/jnb

WILDERNESS EXPERIENCE QUESTIONNAIRE

THIS QUESTIONNAIRE HAS BEEN DESIGNED TO LEARN MORE ABOUT THE PREFERENCES OF THE USERS OF THE WEMINUCHE WILDERNESS. PLEASE ANSWER THE QUESTIONS BASED ON YOUR EXPERIENCES IN THE WEMINUCHE WILDERNESS AREA DURING THE SUMMER OF 1977 (JUNE THROUGH SEPTEMBER).

- How many total visits did you make to the Weminuche Wilderness this past summer (June - Sept.)? _____ Total number of visits.
- How many other designated wilderness areas did you visit this past summer (June - Sept.)? _____ Number of other wilderness areas.
- How many people were in your party on your most recent trip into the Weminuche Wilderness? _____ Number of people, including yourself.
- How many nights, if any, did you spend in the Weminuche Wilderness on your most recent trip? _____ Number of nights.
- Please check all the activities you engaged in when visiting the Weminuche Wilderness over the entire summer (June - Sept.).

- | | | |
|--|---|---|
| 1. <input type="checkbox"/> Camping | 4. <input type="checkbox"/> Hiking | 7. <input type="checkbox"/> Nature Study |
| 2. <input type="checkbox"/> Fishing | 5. <input type="checkbox"/> Photography | 8. <input type="checkbox"/> Technical Mountain Climbing |
| 3. <input type="checkbox"/> Horseback Riding | 6. <input type="checkbox"/> Picnicking | 9. <input type="checkbox"/> Other _____ |
- (Please fill in)

- Which activity among those you checked in question number 5 was the most important to you as a reason for visiting the area. (circle one)

1 2 3 4 5 6 7 8 9

- Different wildland recreation opportunities provide users with different types of experiences. These experiences are affected by many things, some which are satisfying and some which are not. How much did each of the following items add to (+) or detract from (-) your wilderness experience in the Weminuche Wilderness during the summer of 1977 (June - Sept.)? Circle only one number for each item.

Effect on Your Wilderness Experience:								
ADDS TO				Neither Adds Nor Detracts	DETRACTS FROM			
Most Strongly	Strongly	Moderately	Slightly		Slightly	Moderately	Strongly	Most Strongly

Items:

1) Being away from civilization for awhile	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Being out-of-doors	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Enjoying the sights and sounds of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Experiencing the peace and calm	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Telling others about the trip	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Doing something with your family	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Reflecting on your religious or other spiritual values	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Taking risks	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Meeting other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Thinking about your future	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Doing things with your companions	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Trying to keep physically fit	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Being near others who could help if you needed them	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Being away from crowds of people	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Teaching your outdoor skills to others	+4	+3	+2	+1	0	-1	-2	-3	-4
16) Resting physically	+4	+3	+2	+1	0	-1	-2	-3	-4
17) Being sure of what will happen to you	+4	+3	+2	+1	0	-1	-2	-3	-4
18) Developing your skills and ability	+4	+3	+2	+1	0	-1	-2	-3	-4
19) Releasing or reducing some built-up tensions	+4	+3	+2	+1	0	-1	-2	-3	-4
20) Being obligated to no one	+4	+3	+2	+1	0	-1	-2	-3	-4

Effect on Your Wilderness Experience:							
ADDS TO				DTRACTS FROM			
Most Strongly	Strongly	Moderately	Slightly	Neither Adds Nor Deducts	Slightly	Moderately	Most Strongly

Items:

21) Being with other members of your group	+4	+3	+2	+1	0	-1	-2	-3	-4
22) Enjoying the scenery	+4	+3	+2	+1	0	-1	-2	-3	-4
23) Getting away from other people	+4	+3	+2	+1	0	-1	-2	-3	-4
24) Making a good impression upon others	+4	+3	+2	+1	0	-1	-2	-3	-4
25) Being with members of the family	+4	+3	+2	+1	0	-1	-2	-3	-4
26) Learning more about nature	+4	+3	+2	+1	0	-1	-2	-3	-4
27) Chancing dangerous situations	+4	+3	+2	+1	0	-1	-2	-3	-4
28) Seeing other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
29) Learning more about yourself	+4	+3	+2	+1	0	-1	-2	-3	-4
30) Feeling free from society's restrictions	+4	+3	+2	+1	0	-1	-2	-3	-4
31) Getting exercise	+4	+3	+2	+1	0	-1	-2	-3	-4
32) Being near considerate people	+4	+3	+2	+1	0	-1	-2	-3	-4
33) Avoiding the unexpected	+4	+3	+2	+1	0	-1	-2	-3	-4
34) Showing yourself you could do it	+4	+3	+2	+1	0	-1	-2	-3	-4
35) Being away from noise back home	+4	+3	+2	+1	0	-1	-2	-3	-4
36) Sharing your knowledge with others	+4	+3	+2	+1	0	-1	-2	-3	-4
37) Applying skills	+4	+3	+2	+1	0	-1	-2	-3	-4
38) Feeling isolated	+4	+3	+2	+1	0	-1	-2	-3	-4
39) Doing things your own way	+4	+3	+2	+1	0	-1	-2	-3	-4
40) Experiencing new and different things	+4	+3	+2	+1	0	-1	-2	-3	-4
41) Feeling frightened	+4	+3	+2	+1	0	-1	-2	-3	-4
42) Thinking about your personal values	+4	+3	+2	+1	0	-1	-2	-3	-4
43) Not knowing for sure where you are	+4	+3	+2	+1	0	-1	-2	-3	-4
44) Feeling good after being physically active	+4	+3	+2	+1	0	-1	-2	-3	-4
45) Being with people having similar values	+4	+3	+2	+1	0	-1	-2	-3	-4
46) Having a change from your everyday life	+4	+3	+2	+1	0	-1	-2	-3	-4
47) Being close to nature	+4	+3	+2	+1	0	-1	-2	-3	-4
48) Discovering something new	+4	+3	+2	+1	0	-1	-2	-3	-4
49) Gaining an appreciation of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
50) Being alone	+4	+3	+2	+1	0	-1	-2	-3	-4

3. Please check (✓) how satisfied (+) or dissatisfied (-) overall you were with your most recent Weminuche Wilderness trip.

Very High	High	Moderate	Slightly	NEUTRAL	Slightly	Moderate	High	Very High
(+)					(-)			
Level of Satisfaction					Level of Dissatisfaction			

9. How did you learn about the Weminuche Wilderness before your first visit? (check as many reasons as appropriate)

1. ☐ A friend
2. ☐ A magazine or newspaper
3. ☐ Radio or television
4. ☐ A book or trail guide
5. ☐ A map
6. ☐ Other (please specify) _____

10. Before entering the Weminuche Wilderness, did you possess? (check as many as appropriate)

1. ☐ A topographic map
2. ☐ A Forest Service map
3. ☐ A trail guide book
4. ☐ A map or written information from a former visitor to the area
5. ☐ Verbal directions and information from another person
6. ☐ Information on Weminuche Wilderness regulations

11. The following section contains issues of special concern to the managers of the Weminucue Wilderness Area. Please circle the number which best describes how much you favor (+) or oppose (-) each of the possible management actions listed below. Circle only one number for each possible action.

FAVOR				OPPOSE		
Very Strongly	Strongly	Moderately	NEUTRAL	Moderately	Strongly	Very Strongly

Possible Management Actions:

1) Allowing unleashed dogs in wilderness	+3	+2	+1	0	-1	-2	-3
2) Maintaining trails at a primitive level	+3	+2	+1	0	-1	-2	-3
3) Having fewer locational signs in the wilderness	+3	+2	+1	0	-1	-2	-3
4) Allowing grazing of domestic sheep	+3	+2	+1	0	-1	-2	-3
5) Having no camping permitted around heavily used lakes	+3	+2	+1	0	-1	-2	-3
6) Limiting the number of people and horses to a total of 15 per party	+3	+2	+1	0	-1	-2	-3
7) Requiring entry permits for wilderness use	+3	+2	+1	0	-1	-2	-3
8) Allowing natural wildfires in wilderness to burn uncontrolled	+3	+2	+1	0	-1	-2	-3
9) Limiting the number of people in heavy recreation use areas	+3	+2	+1	0	-1	-2	-3
10) Prohibiting camping within 100 feet of trails	+3	+2	+1	0	-1	-2	-3
11) Limiting the stocking of fish in lakes that have heavy recreation use	+3	+2	+1	0	-1	-2	-3
12) Prohibiting campfires within 100 feet of trails	+3	+2	+1	0	-1	-2	-3
13) Restricting horse grazing around wilderness lakes	+3	+2	+1	0	-1	-2	-3
14) Prohibiting horses in some areas of wilderness	+3	+2	+1	0	-1	-2	-3
15) Constructing bridges only across large streams	+3	+2	+1	0	-1	-2	-3

12. The items below deal with environmental features which can affect whether or not you have an enjoyable wilderness recreation experience. Please rate each of the features on how much it added to (+) or detracted from (-) your experience when you visited the Weminucue Wilderness Area. Circle only one number for each feature.

Effect on Your Experience:							
ADDED TO				DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly	Neither Adds Nor Detracts	Slightly	Moderately	Strongly

Environmental Features:

1) Natural lakes and ponds	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Evidence of mining activity	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Panoramic (wide angle) vistas	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Boulder fields	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Unpredictable weather	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Cutthroat trout	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Aspen groves	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Clean, fresh air	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Eagles	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Lofly ridges	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Hot springs	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Old cabins	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Barren, rocky peaks	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Fall and snow storms	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Good fishing streams	+4	+3	+2	+1	0	-1	-2	-3	-4

Effect on Your Experience:								
ADDED TO					DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly	Neither Adds Nor Deducts	Slightly	Moderately	Strongly	Most Strongly

Environmental Features:

16)	Edible plants	+4	+3	+2	+1	0	-1	-2	-3	-4
17)	Cascading streams	+4	+3	+2	+1	0	-1	-2	-3	-4
18)	Coyotes	+4	+3	+2	+1	0	-1	-2	-3	-4
19)	Deep gorges	+4	+3	+2	+1	0	-1	-2	-3	-4
20)	Isolated lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
21)	Historic landmarks	+4	+3	+2	+1	0	-1	-2	-3	-4
22)	Alpine meadows	+4	+3	+2	+1	0	-1	-2	-3	-4
23)	Mountain goats	+4	+3	+2	+1	0	-1	-2	-3	-4
24)	Evergreen forests	+4	+3	+2	+1	0	-1	-2	-3	-4
25)	Murky, discolored water	+4	+3	+2	+1	0	-1	-2	-3	-4
26)	Variety of birds	+4	+3	+2	+1	0	-1	-2	-3	-4
27)	Alpine or tundra vegetation	+4	+3	+2	+1	0	-1	-2	-3	-4
28)	Rock slides	+4	+3	+2	+1	0	-1	-2	-3	-4
29)	Boggy areas	+4	+3	+2	+1	0	-1	-2	-3	-4
30)	Rainbow trout	+4	+3	+2	+1	0	-1	-2	-3	-4
31)	Deer	+4	+3	+2	+1	0	-1	-2	-3	-4
32)	Drinkable mountain water	+4	+3	+2	+1	0	-1	-2	-3	-4
33)	Virgin forests	+4	+3	+2	+1	0	-1	-2	-3	-4
34)	Areas above timberline	+4	+3	+2	+1	0	-1	-2	-3	-4
35)	Beaver	+4	+3	+2	+1	0	-1	-2	-3	-4
36)	Wildflowers	+4	+3	+2	+1	0	-1	-2	-3	-4
37)	Naturally reproducing native fish population	+4	+3	+2	+1	0	-1	-2	-3	-4
38)	Small mammals	+4	+3	+2	+1	0	-1	-2	-3	-4
39)	Avalanche paths	+4	+3	+2	+1	0	-1	-2	-3	-4
40)	Mountain springs	+4	+3	+2	+1	0	-1	-2	-3	-4
41)	Steep hillsides	+4	+3	+2	+1	0	-1	-2	-3	-4
42)	Signhorn sheep	+4	+3	+2	+1	0	-1	-2	-3	-4
43)	Unusually shaped rocks	+4	+3	+2	+1	0	-1	-2	-3	-4
44)	Ptarmigan (birds)	+4	+3	+2	+1	0	-1	-2	-3	-4
45)	Dense, thick undergrowth	+4	+3	+2	+1	0	-1	-2	-3	-4
46)	Waterfalls	+4	+3	+2	+1	0	-1	-2	-3	-4
47)	Rugged terrain	+4	+3	+2	+1	0	-1	-2	-3	-4
48)	Reservoirs (manmade)	+4	+3	+2	+1	0	-1	-2	-3	-4
49)	Numerous plant species	+4	+3	+2	+1	0	-1	-2	-3	-4
50)	Rock pinnacles	+4	+3	+2	+1	0	-1	-2	-3	-4
51)	Good fishing lakes	+4	+3	+2	+1	0	-1	-2	-3	-4

13. If a private landowner could provide you with your ideal 3-day (2 night) wilderness hiking/camping experience, how much money would you be willing to pay for the use of his property for that time? \$ _____ for a 3-day/2-night ideal wilderness hiking/camping experience.

14. Wildland area managers are concerned about the effects of rising gasoline costs on recreation use and opportunity. This is an 'iffy' question, but give us your best guess: What would the price of gasoline have had to be during the summer of 1977 before you would not have visited the Weminuche Wilderness Area? (check one)

75-85c 86c-\$1.00 \$1.01-\$1.25 \$1.26-\$1.50 \$1.51-\$2.00 over \$2.00

15. Please enter the zip code of your home residence. _____

16. Your sex? 1. _____ female 2. _____ male

17. Your age as your last birthday? _____ years

18. Population of community where you now live?

1. ____ 100,000 or more 3. ____ 5,000 - 25,000 5. ____ farm
2. ____ 25,000 - 100,000 4. ____ below 5,000

19. What is the highest year of formal schooling you have completed?

Elementary school	1	2	3	4	5	6	7	8
High school or vocational school	9	10	11	12				
College or technical school	13	14	15	16				
Post graduate school	17	18	19	20	21	22		

20. Wilderness means many things to people. What does the word "wilderness" mean to you?

Thank you for your cooperation. Please return the questionnaire in the self-addressed, stamped envelope provided.

CSU Project 3325 _____

Glenn E. Haas
Research Associate
Department of Recreation Resources
Colorado State University
Fort Collins, Colorado 80523
(303-491-7357)

College of Forestry and Natural Resources
Department of Recreation Resources

Colorado State University
Fort Collins, Colorado
80523

Dear Rawah User:

We appreciated the cooperation you gave us last summer when we interviewed you briefly in the Rawah Wilderness Area near Fort Collins, Colorado. Your name has been selected randomly from those interview records, and we need your help again.

Would you please take about 15 minutes to complete the enclosed questionnaire. It was designed to find out more about the types of recreation opportunities that are preferred by users of the area. The information is being collected to help guide future management decisions.

A relatively small sample of people were selected to get the questionnaire, so your response is indeed important. Please complete the questionnaire as soon as possible, fold it, and mail it in the postage-paid envelope provided. Your answer will be kept confidential. Thank you in advance for your help.

Sincerely,

A handwritten signature in dark ink, appearing to read "Glenn E. Haas", written in a cursive style.

Glenn E. Haas
Research Associate

GEH/jnb

RAWAH EXPERIENCE QUESTIONNAIRE

THIS QUESTIONNAIRE HAS BEEN DESIGNED TO LEARN MORE ABOUT THE PREFERENCES OF THE USERS OF THE RAWAH WILDERNESS. PLEASE ANSWER THE QUESTIONS BASED ON YOUR EXPERIENCES IN THE RAWAH WILDERNESS AREA DURING THE SUMMER OF 1977 (JUNE THROUGH SEPTEMBER).

1. How many total visits did you make to the Rawah Wilderness this past summer (June - Sept.)? _____ Total number of visits.
2. How many other designated wilderness areas did you visit this past summer (June - Sept.)? _____ Number of other wilderness areas.
3. How many people were in your party on your most recent trip into the Rawah Wilderness? _____ Number of people, including yourself.
4. How many nights, if any, did you spend in the Rawah Wilderness on your most recent trip? _____ Number of nights.
5. Please check all the activities you engaged in when visiting the Rawah Wilderness over the entire summer (June - Sept.).

1. _____ Camping	4. _____ Hiking	7. _____ Nature Study
2. _____ Fishing	5. _____ Photography	8. _____ Technical Mountain Climbing
3. _____ Horseback Riding	6. _____ Picnicking	9. _____ Other _____

(please fill in)

6. Which activity among those you checked in question number 5 was the most important to you as a reason for visiting the area. (circle one)

1 2 3 4 5 6 7 8 9

7. Different wildland recreation opportunities provide users with different types of experiences. These experiences are affected by many things, some which are satisfying and some which are not. How much did each of the following items add to (+) or detract from (-) your wilderness experience in the Rawah Wilderness during the summer of 1977 (June - Sept.)? Circle only one number for each item.

Effect on Your Wilderness Experience:								
ADDS TO				Neither Adds Nor Detracts	DETRACTS FROM			
Most Strongly	Strongly	Moderately	Slightly		Slightly	Moderately	Strongly	Most Strongly

Items:

1) Being away from civilization for awhile	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Being out-of-doors	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Enjoying the sights and sounds of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Experiencing the peace and calm	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Telling others about the trip	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Doing something with your family	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Reflecting on your religious or other spiritual values	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Taking risks	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Meeting other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Thinking about your future	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Doing things with your companions	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Trying to keep physically fit	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Being near others who could help if you needed them	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Being away from crowds of people	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Teaching your outdoor skills to others	+4	+3	+2	+1	0	-1	-2	-3	-4
16) Resting physically	+4	+3	+2	+1	0	-1	-2	-3	-4
17) Being sure of what will happen to you	+4	+3	+2	+1	0	-1	-2	-3	-4
18) Developing your skills and ability	+4	+3	+2	+1	0	-1	-2	-3	-4
19) Releasing or reducing some built-up tensions	+4	+3	+2	+1	0	-1	-2	-3	-4
20) Being obligated to no one	+4	+3	+2	+1	0	-1	-2	-3	-4

Effect on Your Wilderness Experience							
ADDS TO				Neither Adds Nor Deducts	DETRACTS FROM		
Most Strongly	Strongly	Moderately	Slightly		Slightly	Moderately	Most Strongly

Items:

21) Being with other members of your group	+4	+3	+2	+1	0	-1	-2	-3	-4
22) Enjoying the scenery	+4	+3	+2	+1	0	-1	-2	-3	-4
23) Getting away from other people	+4	+3	+2	+1	0	-1	-2	-3	-4
24) Making a good impression upon others	+4	+3	+2	+1	0	-1	-2	-3	-4
25) Being with members of the family	+4	+3	+2	+1	0	-1	-2	-3	-4
26) Learning more about nature	+4	+3	+2	+1	0	-1	-2	-3	-4
27) Chancing dangerous situations	+4	+3	+2	+1	0	-1	-2	-3	-4
28) Seeing other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
29) Learning more about yourself	+4	+3	+2	+1	0	-1	-2	-3	-4
30) Feeling free from society's restrictions	+4	+3	+2	+1	0	-1	-2	-3	-4
31) Getting exercise	+4	+3	+2	+1	0	-1	-2	-3	-4
32) Being near considerate people	+4	+3	+2	+1	0	-1	-2	-3	-4
33) Avoiding the unexpected	+4	+3	+2	+1	0	-1	-2	-3	-4
34) Showing yourself you could do it	+4	+3	+2	+1	0	-1	-2	-3	-4
35) Being away from noise back home	+4	+3	+2	+1	0	-1	-2	-3	-4
36) Sharing your knowledge with others	+4	+3	+2	+1	0	-1	-2	-3	-4
37) Applying skills	+4	+3	+2	+1	0	-1	-2	-3	-4
38) Feeling isolated	+4	+3	+2	+1	0	-1	-2	-3	-4
39) Doing things your own way	+4	+3	+2	+1	0	-1	-2	-3	-4
40) Experiencing new and different things	+4	+3	+2	+1	0	-1	-2	-3	-4
41) Feeling frightened	+4	+3	+2	+1	0	-1	-2	-3	-4
42) Thinking about your personal values	+4	+3	+2	+1	0	-1	-2	-3	-4
43) Not knowing for sure where you are	+4	+3	+2	+1	0	-1	-2	-3	-4
44) Feeling good after being physically active	+4	+3	+2	+1	0	-1	-2	-3	-4
45) Being with people having similar values	+4	+3	+2	+1	0	-1	-2	-3	-4
46) Having a change from your everyday life	+4	+3	+2	+1	0	-1	-2	-3	-4
47) Being close to nature	+4	+3	+2	+1	0	-1	-2	-3	-4
48) Discovering something new	+4	+3	+2	+1	0	-1	-2	-3	-4
49) Gaining an appreciation of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
50) Being alone	+4	+3	+2	+1	0	-1	-2	-3	-4

8. Please check (✓) how satisfied (+) or dissatisfied (-) overall you were with your most recent Rawan Wilderness trip.

Very High	High	Moderate	Slightly	NEUTRAL	Slightly	Moderate	High	Very High
Level of Satisfaction					Level of Dissatisfaction			

9. If a private landowner could provide you with your ideal 3-day (2-night) wilderness hiking/camping experience, how much money would you be willing to pay for the use of his property for that time? \$_____ for a 3-day/2-night ideal wilderness hiking/camping experience.

10. Wildland area managers are concerned about the effects of rising gasoline costs on recreation use and opportunity. This is an "iffy" question, but give it your best guess: What would the price of gasoline have had to be during the summer of 1977 before you would not have visited the Rawan Wilderness Area? (check one)

75-85¢ 86¢-\$1.00 \$1.01-1.25 \$1.26-1.50 \$1.51-2.00 over \$2.00

11. The items below deal with environmental features which can affect whether or not you have an enjoyable wilderness recreation experience. Please rate each of the features on how much it added to (+) or detracted from (-) your experience when you visited the Rawah Wilderness Area. Circle only one number for each feature.

Effect of Your Experience								
ADDED TO				Neither Adds Nor Deducts	DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly		Slightly	Moderately	Strongly	Most Strongly

Environmental Features:

1) Natural lakes and ponds	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Evidence of forest fires	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Panoramic (wide angle) vistas	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Boulder fields	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Unpredictable weather	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Cutthroat trout	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Aspen groves	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Clean, fresh air	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Ducks	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Lofty ridges	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Meandering streams	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Old cabins	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Barren, rocky peaks	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Hail and sleet storms	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Good fishing streams	+4	+3	+2	+1	0	-1	-2	-3	-4
16) Edible plants	+4	+3	+2	+1	0	-1	-2	-3	-4
17) Cascading streams	+4	+3	+2	+1	0	-1	-2	-3	-4
18) Coyotes	+4	+3	+2	+1	0	-1	-2	-3	-4
19) Unusually shaped rocks	+4	+3	+2	+1	0	-1	-2	-3	-4
20) Isolated lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
21) Evidence of glacial activity	+4	+3	+2	+1	0	-1	-2	-3	-4
22) Alpine meadows	+4	+3	+2	+1	0	-1	-2	-3	-4
23) Elk	+4	+3	+2	+1	0	-1	-2	-3	-4
24) Evergreen forests	+4	+3	+2	+1	0	-1	-2	-3	-4
25) Water diversion ditches	+4	+3	+2	+1	0	-1	-2	-3	-4
26) Variety of birds	+4	+3	+2	+1	0	-1	-2	-3	-4
27) Alpine or tundra vegetation	+4	+3	+2	+1	0	-1	-2	-3	-4
28) Rock slides	+4	+3	+2	+1	0	-1	-2	-3	-4
29) Boggy areas	+4	+3	+2	+1	0	-1	-2	-3	-4
30) Rainbow trout	+4	+3	+2	+1	0	-1	-2	-3	-4
31) Deer	+4	+3	+2	+1	0	-1	-2	-3	-4
32) Drinkable	+4	+3	+2	+1	0	-1	-2	-3	-4
33) Virgin forests	+4	+3	+2	+1	0	-1	-2	-3	-4
34) Areas above timberline	+4	+3	+2	+1	0	-1	-2	-3	-4
35) Beaver	+4	+3	+2	+1	0	-1	-2	-3	-4
36) Wildflowers	+4	+3	+2	+1	0	-1	-2	-3	-4
37) Naturally reproducing native fish	+4	+3	+2	+1	0	-1	-2	-3	-4
38) Small mammals	+4	+3	+2	+1	0	-1	-2	-3	-4
39) Gently rolling topography	+4	+3	+2	+1	0	-1	-2	-3	-4
40) Mountain springs	+4	+3	+2	+1	0	-1	-2	-3	-4
41) Steep hillsides	+4	+3	+2	+1	0	-1	-2	-3	-4
42) Bighorn sheep	+4	+3	+2	+1	0	-1	-2	-3	-4
43) Snowfields	+4	+3	+2	+1	0	-1	-2	-3	-4
44) Ptarmigan (birds)	+4	+3	+2	+1	0	-1	-2	-3	-4
45) Dense, thick undergrowth	+4	+3	+2	+1	0	-1	-2	-3	-4
46) Waterfalls	+4	+3	+2	+1	0	-1	-2	-3	-4
47) Rugged terrain	+4	+3	+2	+1	0	-1	-2	-3	-4
48) Good fishing lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
49) Numerous plant species	+4	+3	+2	+1	0	-1	-2	-3	-4
50) Beaver ponds	+4	+3	+2	+1	0	-1	-2	-3	-4
51) Windy areas	+4	+3	+2	+1	0	-1	-2	-3	-4

12. If you perceived the following factors on your visit(s) to the Rawah Wilderness (summer, 1977), please circle one number representing how much of a problem it was. Circle number 5 if you did not perceive the factor.

How Much Was it a Problem?				
No Problem	Slight Problem	Moderate Problem	Large Problem	Extreme Problem

Factors:

Did Not Perceive

1) Too many people camping nearby	0	1	2	3	4	5
2) Too many tents visible around lakes	0	1	2	3	4	5
3) Too many people on trails	0	1	2	3	4	5
4) Campsites too close together	0	1	2	3	4	5
5) Too many horses	0	1	2	3	4	5
6) Too many day-use visitors	0	1	2	3	4	5
7) Lack of information describing the recreation use	0	1	2	3	4	5
8) Too many pets in wilderness	0	1	2	3	4	5
9) Dead vegetation around campsites	0	1	2	3	4	5
10) Signs of improper sanitation disposal practices	0	1	2	3	4	5
11) Eroded (rutted) trails	0	1	2	3	4	5
12) Evidence of numerous campfires near lakes	0	1	2	3	4	5
13) Damage to vegetation around lakes	0	1	2	3	4	5
14) Major trails too close to lakes	0	1	2	3	4	5
15) Muddy stream crossings	0	1	2	3	4	5
16) Areas stripped of available firewood	0	1	2	3	4	5
17) Too many man-made structures (toilets, bridges, etc.)	0	1	2	3	4	5
18) Other (please specify):	0	1	2	3	4	5

13. This question concerns possible management actions for the Rawah Wilderness. Please circle the number which best describes how much you favor (+) or oppose (-) each of the possible management actions listed below.

FAVOR			Neutral	OPPOSE		
Very Strongly	Strongly	Moderately		Moderately	Strongly	Very Strongly

Possible Management Actions:

1) Eliminate existing regulations	+3	+2	+1	0	-1	-2	-3
2) Continue current wilderness regulations	+3	+2	+1	0	-1	-2	-3
3) Provide more pit toilets	+3	+2	+1	0	-1	-2	-3
4) Provide better information about regulations	+3	+2	+1	0	-1	-2	-3
5) Provide maps showing where crowded areas are	+3	+2	+1	0	-1	-2	-3
6) Provide information on the area's natural environment	+3	+2	+1	0	-1	-2	-3
7) Provide recreational information about nearby backcountry areas	+3	+2	+1	0	-1	-2	-3
8) Have more day hiking trails outside wilderness	+3	+2	+1	0	-1	-2	-3
9) Have longer, more winding routes to wilderness lakes	+3	+2	+1	0	-1	-2	-3
10) Leave natural obstacles across trails	+3	+2	+1	0	-1	-2	-3
11) Allow horses only in certain areas	+3	+2	+1	0	-1	-2	-3
12) Have fewer signs showing distances	+3	+2	+1	0	-1	-2	-3
13) Have areas where day hikers may not go	+3	+2	+1	0	-1	-2	-3
14) Prohibit open campfires in some areas	+3	+2	+1	0	-1	-2	-3
15) Have more wilderness rangers	+3	+2	+1	0	-1	-2	-3

FAVOR					OPPOSE		
Very Strongly	Strongly	Moderately	Neutral		Moderately	Strongly	Very Strongly

Possible Management Actions:

16) Have bridges only where stream crossing is dangerous	+3	+2	+1	0	-1	-2	-3
17) Have areas where no overnight camping is allowed	+3	+2	+1	0	-1	-2	-3
18) Stop stocking fish in lakes which attract too many visitors	+3	+2	+1	0	-1	-2	-3
19) Allow camping only at sites designated by a sign	+3	+2	+1	0	-1	-2	-3
20) Prohibit pets	+3	+2	+1	0	-1	-2	-3
21) Establish a daily visitor entry limit on heavily used trails	+3	+2	+1	0	-1	-2	-3
22) Limit the number of people in the wilderness on weekends and holidays	+3	+2	+1	0	-1	-2	-3
23) Establish a permit system that regulates the number of campers in heavily used areas	+3	+2	+1	0	-1	-2	-3
24) Require a permit which specifies the date of wilderness entry	+3	+2	+1	0	-1	-2	-3
25) Require a permit only during July and August	+3	+2	+1	0	-1	-2	-3
26) Require a permit which specifies area where you may camp	+3	+2	+1	0	-1	-2	-3
27) Other actions (please specify)	+3	+2	+1	0	-1	-2	-3

14. Please enter the zip code of your home residence. _____

15. Your sex? 1. ____ female 2. ____ male

16. Your age at your last birthday? _____ years

17. Population of community where you now live?

1. ____ 100,000 or more 3. ____ 5,000 - 25,000 5. ____ farm
2. ____ 25,000 - 100,000 4. ____ below 5,000

18. What is the highest year of formal schooling you have completed?

Elementary school	1	2	3	4	5	6	7	8
High school or vocational school	9	10	11	12				
College or technical school	13	14	15	16				
Post graduate school	17	18	19	20	21	22		

19. Wilderness means many things to people. What does the word "wilderness" mean to you?

Thank you for your cooperation. Please return the questionnaire in the self-addressed, stamped envelope provided.

CSU Project 5326 _____

Glenn E. Haas, Research Associate
Department of Recreation Resources
Colorado State University
Fort Collins, Colorado 80523
(303-491-7357)

College of Forestry and Natural Resources
Department of Recreation Resources

Colorado State University
Fort Collins, Colorado
80523

Dear Eagles Nest User:

We appreciated the cooperation you gave us last summer when we interviewed you briefly in the Eagles Nest Wilderness Area near Dillon, Colorado. Your name has been selected randomly from those interview records, and we need your help again.

Would you please take about 15 minutes to complete the enclosed questionnaire. It was designed to find out more about the types of recreation opportunities that are preferred by users of the area. The information is being collected to help guide future management decisions.

A relatively small sample of people were selected to get the questionnaire, so your response is indeed important. Please complete the questionnaire as soon as possible, fold it, and mail it in the postage-paid envelope provided. Your answer will be kept confidential. Thank you in advance for your help.

Sincerely,

A handwritten signature in dark ink, appearing to read "Glenn E. Haas", written in a cursive style.

Glenn E. Haas
Research Associate

GEH/jnb

EAGLES NEST EXPERIENCE QUESTIONNAIRE

THIS QUESTIONNAIRE HAS BEEN DESIGNED TO LEARN MORE ABOUT THE PREFERENCES OF THE USERS OF THE EAGLES NEST WILDERNESS. PLEASE ANSWER THE QUESTIONS BASED ON YOUR EXPERIENCES IN THE EAGLES NEST WILDERNESS AREA DURING THE SUMMER OF 1977 (JUNE THROUGH SEPTEMBER).

- How many total visits did you make to the Eagles Nest Wilderness this past summer (June - Sept.)? _____ Total number of visits.
- How many other designated wilderness areas did you visit this past summer (June - Sept.)? _____ Number of other wilderness areas.
- How many people were in your party on your most recent trip into the Eagles Nest Wilderness? _____ Number of people, including yourself.
- How many nights, if any, did you spend in the Eagles Nest Wilderness on your most recent trip? _____ Number of nights.
- Please check all the activities you engaged in when visiting the Eagles Nest Wilderness over the entire summer (June - Sept.).

1. _____ Camping	4. _____ Hiking	7. _____ Nature Study
2. _____ Fishing	5. _____ Photography	8. _____ Technical Mountain Climbing
3. _____ Horseback Riding	6. _____ Picnicking	9. _____ Other _____

(please fill in)
- Which activity among those you checked in question number 5 was the most important to you as a reason for visiting the area. (circle one)

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---
- Different wildland recreation opportunities provide users with different types of experiences. These experiences are affected by many things, some which are satisfying and some which are not. How much did each of the following items add to (+) or detract from (-) your wilderness experience in the Eagles Nest Wilderness during the summer of 1977 (June - Sept.)? Circle only one number for each item.

Effect on Your Wilderness Experience:									
ADDED TO					Neither Added Nor Detracted	DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly	Slightly		Moderately	Strongly	Most Strongly	
Items:									
1) Being away from civilization for awhile	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Being out-of-doors	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Enjoying the sights and sounds of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Experiencing the peace and calm	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Telling others about the trip	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Doing something with your family	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Reflecting on your religious or other spiritual values	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Taking risks	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Meeting other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Thinking about your future	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Doing things with your companions	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Trying to keep physically fit	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Being near others who could help if you needed them	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Being away from crowds of people	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Teaching your outdoor skills to others	+4	+3	+2	+1	0	-1	-2	-3	-4
16) Resting physically	+4	+3	+2	+1	0	-1	-2	-3	-4
17) Being sure of what will happen to you	+4	+3	+2	+1	0	-1	-2	-3	-4
18) Developing your skills and ability	+4	+3	+2	+1	0	-1	-2	-3	-4
19) Releasing or reducing some built-up tensions	+4	+3	+2	+1	0	-1	-2	-3	-4
20) Being obligated to no one	+4	+3	+2	+1	0	-1	-2	-3	-4

Effect on Your Wilderness Experience									
ADDED TO					Neither Added Nor Detracted	DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly			Slightly	Moderately	Strongly	Most Strongly

Items:

21) Being with other members of your group	+4	+3	+2	+1	0	-1	-2	-3	-4
22) Enjoying the scenery	+4	+3	+2	+1	0	-1	-2	-3	-4
23) Getting away from other people	+4	+3	+2	+1	0	-1	-2	-3	-4
24) Making a good impression upon others	+4	+3	+2	+1	0	-1	-2	-3	-4
25) Being with members of the family	+4	+3	+2	+1	0	-1	-2	-3	-4
26) Learning more about nature	+4	+3	+2	+1	0	-1	-2	-3	-4
27) Chancing dangerous situations	+4	+3	+2	+1	0	-1	-2	-3	-4
28) Seeing other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
29) Learning more about yourself	+4	+3	+2	+1	0	-1	-2	-3	-4
30) Feeling free from society's restrictions	+4	+3	+2	+1	0	-1	-2	-3	-4
31) Getting exercise	+4	+3	+2	+1	0	-1	-2	-3	-4
32) Being near considerate people	+4	+3	+2	+1	0	-1	-2	-3	-4
33) Avoiding the unexpected	+4	+3	+2	+1	0	-1	-2	-3	-4
34) Showing yourself you could do it	+4	+3	+2	+1	0	-1	-2	-3	-4
35) Being away from noise back home	+4	+3	+2	+1	0	-1	-2	-3	-4
36) Sharing your knowledge with others	+4	+3	+2	+1	0	-1	-2	-3	-4
37) Applying skills	+4	+3	+2	+1	0	-1	-2	-3	-4
38) Feeling isolated	+4	+3	+2	+1	0	-1	-2	-3	-4
39) Doing things your own way	+4	+3	+2	+1	0	-1	-2	-3	-4
40) Experiencing new and different things	+4	+3	+2	+1	0	-1	-2	-3	-4
41) Feeling frightened	+4	+3	+2	+1	0	-1	-2	-3	-4
42) Thinking about your personal values	+4	+3	+2	+1	0	-1	-2	-3	-4
43) Not knowing for sure where you are	+4	+3	+2	+1	0	-1	-2	-3	-4
44) Feeling good after being physically active	+4	+3	+2	+1	0	-1	-2	-3	-4
45) Being with people having similar values	+4	+3	+2	+1	0	-1	-2	-3	-4
46) Having a change from your everyday life	+4	+3	+2	+1	0	-1	-2	-3	-4
47) Being close to nature	+4	+3	+2	+1	0	-1	-2	-3	-4
48) Discovering something new	+4	+3	+2	+1	0	-1	-2	-3	-4
49) Gaining an appreciation of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
50) Being alone	+4	+3	+2	+1	0	-1	-2	-3	-4

8. Please check (✓) how satisfied (+) or dissatisfied (-) overall you were with your most recent Eagles Nest Wilderness Trip?

Very High	High	Moderate	Slightly	NEUTRAL	Slightly	Moderate	High	Very High
Level of Satisfaction (+)					Level of Dissatisfaction (-)			

9. If a private landowner could provide you with your ideal 3-day (2-night) wilderness hiking/camping experience, how much money would you be willing to pay for the use of his property for that time? \$_____ for a 3-day/2-night ideal wilderness hiking/camping experience.
10. Wildland area managers are concerned about the effects of rising gasoline costs on recreation use and opportunity. This is an "iffy" question, but give it your best guess: What would the price of gasoline have had to be during the summer of 1977 before you would not have visited the Eagles Nest Wilderness Area? (check one)

75-85¢ 86¢-\$1.00 \$1.01-1.25 \$1.26-1.50 \$1.51-2.00 over \$2.00

11. The items below deal with features of the physical-natural environment which can effect whether or not you have an enjoyable wilderness recreation experience. Please rate each of the features on how much it added to (+) or detracted from (-) your experience when you visited the Eagles Nest Wilderness Area. Circle only one number for each feature.

Effect on Your Experience									
ADDED TO					Neither Added Nor Detracted	DETRACTED FROM			
Most Strongly	Strongly	Moderately	Slightly			Slightly	Moderately	Strongly	Most Strongly

Environmental Features:

1) Natural lakes and ponds	+4	+3	+2	+1	0	-1	-2	-3	-4
2) Evidence of forest fires	+4	+3	+2	+1	0	-1	-2	-3	-4
3) Panoramic (wide angle) vistas	+4	+3	+2	+1	0	-1	-2	-3	-4
4) Boulder fields	+4	+3	+2	+1	0	-1	-2	-3	-4
5) Unpredictable weather	+4	+3	+2	+1	0	-1	-2	-3	-4
6) Cutthroat trout	+4	+3	+2	+1	0	-1	-2	-3	-4
7) Aspen groves	+4	+3	+2	+1	0	-1	-2	-3	-4
8) Clean, fresh air	+4	+3	+2	+1	0	-1	-2	-3	-4
9) Ducks	+4	+3	+2	+1	0	-1	-2	-3	-4
10) Lofty ridges	+4	+3	+2	+1	0	-1	-2	-3	-4
11) Meandering streams	+4	+3	+2	+1	0	-1	-2	-3	-4
12) Old cabins	+4	+3	+2	+1	0	-1	-2	-3	-4
13) Barren, rocky peaks	+4	+3	+2	+1	0	-1	-2	-3	-4
14) Hail and sleet storms	+4	+3	+2	+1	0	-1	-2	-3	-4
15) Good fishing streams	+4	+3	+2	+1	0	-1	-2	-3	-4
16) Edible plants	+4	+3	+2	+1	0	-1	-2	-3	-4
17) Cascading streams	+4	+3	+2	+1	0	-1	-2	-3	-4
18) Eagles	+4	+3	+2	+1	0	-1	-2	-3	-4
19) Unusually shaped rocks	+4	+3	+2	+1	0	-1	-2	-3	-4
20) Isolated lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
21) Evidence of glacial activity	+4	+3	+2	+1	0	-1	-2	-3	-4
22) Alpine meadows	+4	+3	+2	+1	0	-1	-2	-3	-4
23) Elk	+4	+3	+2	+1	0	-1	-2	-3	-4
24) Evergreen forests	+4	+3	+2	+1	0	-1	-2	-3	-4
25) Water diversion ditches	+4	+3	+2	+1	0	-1	-2	-3	-4
26) Variety of birds	+4	+3	+2	+1	0	-1	-2	-3	-4
27) Alpine or tundra vegetation	+4	+3	+2	+1	0	-1	-2	-3	-4
28) Rock slides	+4	+3	+2	+1	0	-1	-2	-3	-4
29) Boggy areas	+4	+3	+2	+1	0	-1	-2	-3	-4
30) Rainbow trout	+4	+3	+2	+1	0	-1	-2	-3	-4
31) Deer	+4	+3	+2	+1	0	-1	-2	-3	-4
32) Drinkable water	+4	+3	+2	+1	0	-1	-2	-3	-4
33) Virgin forests	+4	+3	+2	+1	0	-1	-2	-3	-4
34) Areas above timberline	+4	+3	+2	+1	0	-1	-2	-3	-4
35) Beaver	+4	+3	+2	+1	0	-1	-2	-3	-4
36) Wildflowers	+4	+3	+2	+1	0	-1	-2	-3	-4
37) Naturally reproducing native fish	+4	+3	+2	+1	0	-1	-2	-3	-4
38) Small mammals	+4	+3	+2	+1	0	-1	-2	-3	-4
39) Gently rolling topography	+4	+3	+2	+1	0	-1	-2	-3	-4
40) Mountain springs	+4	+3	+2	+1	0	-1	-2	-3	-4
41) Steep hillsides	+4	+3	+2	+1	0	-1	-2	-3	-4
42) Bighorn sheep	+4	+3	+2	+1	0	-1	-2	-3	-4
43) Snowfields	+4	+3	+2	+1	0	-1	-2	-3	-4
44) Ptarmigan (birds)	+4	+3	+2	+1	0	-1	-2	-3	-4
45) Dense, thick undergrowth	+4	+3	+2	+1	0	-1	-2	-3	-4
46) Waterfalls	+4	+3	+2	+1	0	-1	-2	-3	-4
47) Rugged terrain	+4	+3	+2	+1	0	-1	-2	-3	-4
48) Good fishing lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
49) Numerous plant species	+4	+3	+2	+1	0	-1	-2	-3	-4
50) Old logging roads	+4	+3	+2	+1	0	-1	-2	-3	-4
51) Windy areas	+4	+3	+2	+1	0	-1	-2	-3	-4

12. How long before your last visit to the Eagles Nest Wilderness did you or your party decide to visit the Eagles Nest Wilderness? (check one)

1. ☐ Same day as trip
2. ☐ Day before trip
3. ☐ 2 to 10 days before trip
4. ☐ 11 days to 1 month before trip
5. ☐ 1 to 3 months before trip
6. ☐ Over 3 months before trip

13. How long before your last visit to the Eagles Nest Wilderness did you or your party decide where to travel in the Eagles Nest Wilderness? (check one)

1. ☐ Same day as trip
2. ☐ Day before trip
3. ☐ 2 to 10 days before trip
4. ☐ 11 days to 1 month before trip
5. ☐ 1 to 3 months before trip
6. ☐ Over 3 months before trip

14. How did you learn about the Eagles Nest Wilderness before your first visit? (check as many reasons as appropriate)

1. ☐ A friend
2. ☐ A magazine or newspaper
3. ☐ Radio or television
4. ☐ A book or trail guide
5. ☐ A map
6. ☐ Other (please specify) _____

15. Selected features of the social and man-influenced environment are listed below. Please circle the number which best describes how much each of the following features added to (+) or detracted from (-) your visit(s) to the Eagles Nest Wilderness in the summer, 1977. Circle number 9 if you did not experience the feature, and then go on to the next feature.

Features:		Effect on Your Experience:									
		ADDED TO					DETRACTED FROM				
		Most Strongly	Strongly	Moderately	Slightly	Neither Added Nor Detracted	Slightly	Moderately	Strongly	Most Strongly	
	Did Not Experience										
1) Seeing or hearing domestic dogs in the wilderness	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
2) Seeing evidence of campfires along the trail	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
3) Meeting other wilderness users the first 1-2 hours on the first day of your trip	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
4) Seeing evidence of campfires at your campsite	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
5) Seeing signs of dogs, such as droppings along trail or at campsite	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
6) Camping where it is obvious others have camped before	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
7) Meeting other wilderness users on the last day of your trip	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
8) Camping within hearing distance of other people who are out of sight	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
9) Camping within sight of other people who are out of hearing range	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
10) Seeing domestic livestock grazing near your intended campsite	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
11) Camping where you see or hear no other parties	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
12) Meeting only one small hiking party (1-4 people) during a day	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
13) Meeting only one large hiking party (5 or more people) during a day	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
14) Meeting only two small hiking parties (1-4 people/party) during a day	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
15) Meeting only two large hiking parties (5 or more people/party) during a day	9	+4	+3	+2	+1	0	-1	-2	-3	-4	
16) Meeting only four small hiking parties (1-4 people/party) during a day	9	+4	+3	+2	+1	0	-1	-2	-3	-4	

16. Did a dog accompany your party on your last visit to the Eagles Nest Wilderness?

1. ☐ yes 2. ☐ no

17. The following section contains possible management actions for the Eagles Nest Wilderness Area. Please circle the number which best describes how much you favor (+) or oppose (-) each of the possible management actions listed below. Circle only one number for each possible action.

FAVOR				OPPOSE			
Very Strongly	Strongly	Moderately	NEUTRAL	Moderately	Strongly	Very Strongly	

Possible Management Actions:

1) Maintaining trails at a primitive level	+3	+2	+1	0	-1	-2	-3
2) Limiting the number of people and horses to a total of 10 per party	+3	+2	+1	0	-1	-2	-3
3) Limiting the number of people in heavy recreation use areas	+3	+2	+1	0	-1	-2	-3
4) Prohibiting camping within 100 feet of trails	+3	+2	+1	0	-1	-2	-3
5) Limiting the stocking of fish in lakes that have heavy recreation use	+3	+2	+1	0	-1	-2	-3
6) Prohibiting pets in the Eagles Nest Wilderness	+3	+2	+1	0	-1	-2	-3
7) Prohibiting campfires	+3	+2	+1	0	-1	-2	-3
8) A permit system which requires every person visiting the Eagles Nest Wilderness to obtain a permit either by mail or at the Ranger Station, but does not limit the number of persons or where they can go	+3	+2	+1	0	-1	-2	-3
9) A permit system which requires every person entering the Wilderness to obtain a permit either by mail or at the Ranger Station and which limits the number of people as well as where they can go	+3	+2	+1	0	-1	-2	-3
10) Information signs having trail name only, lacking mileage and destinations	+3	+2	+1	0	-1	-2	-3
11) Limiting information signs only to trailheads and major trail intersections	+3	+2	+1	0	-1	-2	-3
12) Reduce access to the Eagles Nest Wilderness Area wherever possible to protect the wilderness resource	+3	+2	+1	0	-1	-2	-3
13) Allowing domestic livestock grazing within the wilderness	+3	+2	+1	0	-1	-2	-3
14) Reduce available parking at trailheads to regulate use in certain areas	+3	+2	+1	0	-1	-2	-3

18. Please enter the zip code of your home residence. _____

19. Your sex? 1. ☐ female 2. ☐ male

20. Your age at your last birthday? _____ years

21. Population of community where you now live?

1. ☐ 100,000 or more 3. ☐ 5,000 - 25,000 5. ☐ farm
2. ☐ 25,000 - 100,000 4. ☐ below 5,000

22. What is the highest year of formal schooling you have completed? (circle one number)

Elementary school	1	2	3	4	5	6	7	8
High school or vocational school	9	10	11	12	-			
College or technical school	13	14	15	16				
Post graduate school	17	18	19	20	21	22		

23. What was your family's gross annual income in 1977? (check one)

1. <input type="checkbox"/> under \$5,000	5. <input type="checkbox"/> \$20,000 - \$24,999
2. <input type="checkbox"/> \$5,000 - \$9,999	6. <input type="checkbox"/> \$25,000 - \$30,000
3. <input type="checkbox"/> \$10,000 - \$14,999	7. <input type="checkbox"/> over \$30,000
4. <input type="checkbox"/> \$15,000 - \$19,999	

24. Wilderness means many things to people. What does the word "wilderness" mean to you?

Thank you for your cooperation. Please return the questionnaire in the self-addressed, stamped envelope provided.

CSU Project 5326 _____

Glenn E. Haas
Research Associate
Department of Recreation Resources
Colorado State University
Fort Collins, Colorado 80523
(303-491-7357)

Appendix D: Flat Tops Office Report

PSYCHOLOGICAL OUTCOMES AND PHYSICAL RESOURCE
ATTRIBUTES OF THE ENVIRONMENT --
THE FLAT TOPS CASE
(16-646-CA)

Office Report

submitted to

B. L. Driver

Rocky Mountain Forest and Range Experiment Station
USDA Forest Service

prepared by

Perry J. Brown and Glenn E. Haas

Recreation Resources

Colorado State University

Fort Collins, Colorado 80523

July 1979

INTRODUCTION

This Office Report presents data obtained from 222 users of the Flat Tops Wilderness in northwestern Colorado. The study was developed to explore the relationships among desired psychological outcomes of the wilderness recreation experience and physical resource attributes of the wilderness.

An assumption made in this study is that recreationists participate in specific recreation activities (e.g., backpacking) in specific settings (e.g., wilderness with definable physical resource, social, and managerial characteristics) to realize desired psychological outcomes (i.e., satisfactions, immediate benefits, motives, etc.). Therefore, it was hypothesized that for certain outcomes physical resource attributes would be important. For other outcomes which are not physical resource dependent they would be important.

ANALYSIS METHOD

From the 222 returned questionnaires analyses were undertaken to

- (1) determine the types of experiences desired by wilderness users,
- (2) determine which attributes of the physical resource are perceived by these users to add to or detract from a satisfying experience and
- (3) explore the relationship among users desiring different experiences and the physical resource attributes.

Central to achieving these objectives was cluster analysis. To groups of users desiring different experiences, responses to 31 psychological outcome statements were clustered yielding seven item clusters from which six object or "people" groups were derived.¹ Each group of people represents an experience group. Crosstabulations and analysis of variance tests were performed to determine whether these groups could be further identified by socio-economic variables and several variables concerning the recreation excursion and past experience in wilderness areas.

To determine discrete components of the physical resource, 73 physical resource attribute items were clustered into eight variable clusters. To explore the relationship among experience groups and the resource attributes, analysis of variance and Student-Newman-Keuls tests were used in testing for differences between the means of experience groups on the resource clusters. Further analysis included obtaining correlations for each experience group between psychological outcome item clusters and the resource item clusters.

¹BC-TRY cluster analyses were used. Item clustering refers to grouping items based on similarity in responses to them. Object clustering refers to grouping respondents based on how similarly they respond to the item clusters. For a more in-depth explanation of the process see P. J. Brown, G. E. Haas, and M. J. Manfreda, Identifying Resource Attributes Providing Opportunities for Dispersed Recreation, Final Report, 16-631-CA, College of Forestry and Natural Resources, Colorado State University, Ft. Collins, Colorado, November, 1977.

RESULTS

Experience Groups

The 31 psychological outcome statements clustered into dimensions labelled Sharing/Recollection, Risk Taking, Reflection on Personal Values, Achievement, Meeting/Observing Other People, Autonomy, and Relationships with Nature. The items contained in these clusters are shown in Table 1. The lowest reliability coefficient was 0.69. The mean score on the Relationships with Nature cluster was the most positive at 3.14, slightly above the strongly added point on the scale, while the most negative mean score was -0.11 for Meeting Observing Other People. Put on the original rating scale, the clusters Relationships with Nature added strongly; Autonomy, Achievement and Reflect on Personal Values added moderately; Sharing/Recollection and Risk Taking added slightly; Meeting/Observing Other People neither added to nor detracted from the experience.

These variable clusters were used in the object clustering stage of BC-TRY cluster analysis and six distinct groups of people were identified, leaving 13 percent of the cases unclassified.² The mean scores on each cluster for each object group (herein after called experience group) are shown in Table 2.

Groups 1, 2, and 6, relative to the other groups, most often had higher scores on the psychological outcome clusters. For all three of these groups, Relationships with Nature, Achievement, and Autonomy were rated quite highly. The groups differed primarily in Number 1 having a high mean score on Sharing/Recollection and Meeting/Observing Other People, Number 2 having a high

²While some of the 13 percent of unclassified cases were unique and could not realistically be grouped into any of the object clusters, most of these cases contained too much missing data to be clustered.

Table 1. Seven psychological outcome dimensions and their respective items identified from 222 Flat Tops Wilderness user respondents (summer, 1976).

Psychological Outcome Dimensions and Items	Reliability Coefficient	Cluster Mean Score ^a	Standard Deviation
Relationships with Nature Being where things are natural Living in harmony with nature The smells, sights, and sounds of nature Gaining a greater appreciation of nature	.8894	3.14	0.91
Autonomy Doing things your own way Feeling free from society's restrictions Being obligated to no one	.7808	2.34	1.26
Achievement Developing skills Practicing skills	.8078	2.19	1.21
Reflection on Personal Values Having time to think about your life Attaining new perspective on life Contemplating your future Learning about yourself	.8189	1.84	1.07
Sharing/Recollection Showing pictures of trip to family and friends Telling others about trip	.8163	1.39	1.33
Risk Taking Feeling frightened Not knowing for sure where you are Losing your sense of direction Taking risks	.6924	0.11	1.08
Meeting/Observing Other People Meeting other wilderness users Chatting with other hikers Socializing with other parties Knowing others are nearby	.8553	-0.11	1.58

^aA nine-point scale was used where +4 equalled most strongly added and -4 equalled most strongly detracted.

Table 2. Means of psychological outcome clusters for the experience groups.^a

Experience Group	N	(%)	-----Psychological Outcomes-----						
			Relation's With Nature	Autonomy	Achievement	Ref. on Pers. Values	Share/Rec.	Risk-Take	Meet/Obs. Others
1	35	(17)	3.64	2.98	3.06	2.31	3.00	0.12	1.01
2	32	(15)	3.63	3.08	2.91	3.17	1.21	0.42	-0.99
3	36	(17)	3.19	2.03	2.38	1.56	0.92	0.30	0.94
4	38	(18)	2.12	1.12	1.08	1.00	0.84	-0.11	-0.067
5	21	(10)	3.14	2.34	0.88	1.41	2.09	-0.18	0.63
6	22	(10)	3.61	3.06	2.64	1.62	0.86	0.62	-1.95
U	28	(13)							
SAMPLE MEAN			3.14	2.34	2.19	1.84	1.39	0.11	-0.11

^aA nine-point scale was used where +4 equalled most strongly added and -4 equalled most strongly detracted.

mean score on Reflection on Personal Values, and Number 6 having a high negative mean score on Meeting/Observing Other People.

Group 3 had a high mean score on Relationships with Nature, with medium range mean scores on Achievement and Autonomy. Group 4, the overall low scorers, were highest on Relationships with Nature. Additionally, they were the only group with two negatively rated psychological outcomes, Risk Taking and Meeting/Observing Other People. The highest psychological outcome score for Group 5 was Relationships with Nature, although means in the middle to high range were found on the outcomes Autonomy and Sharing/Recollection.

Of these six experience groups there was not one which dominated the total sample. There were no groups containing less than 10 percent or more than 18 percent of the cases.

Additional analyses were performed to further characterize individuals in the experience groups. Analysis of variance results indicated the groups differed on two wilderness trip related variables and two social variables (Table 3). However, in exploring exactly where the differences between means were located using the Student-Newman-Keuls test, it was found that differences were not common. Experience Group 2 was found to be significantly younger than groups 1, 3, 4, and 5. Group 1 had significantly lower mean years of education than groups 4 and 6. Group 4 had a significantly few number of nights spent in the wilderness than Group 1. Group 2 had significantly fewer people in their party than Group 3.

Results of crosstabulations revealed one significant chi square test out of 10 social background variables (Table 4). This test was significant for the variable participating in nature study. The lambda test for percent reduction of error showed that we could reduce error in guessing the modal

Table 3. Analysis of variance and Student-Newman-Keuls results on the mean differences of experience groups on socio-economic and trip related variables.

Variable	Experience Group	Mean	F-Value	Significant Differences
Age			3.78* ^a	3,5,1,4>2
	1	36.0		
	2	28.4		
	3	37.2		
	4	35.1		
	5	36.9		
	6	30.0		
Education			2.84*	6,4>1
	1	13.7		
	2	14.7		
	3	14.9		
	4	15.4		
	5	14.3		
	6	16.0		
Nights Spent in Wilderness			2.49*	1>4
	1	3.5		
	2	2.9		
	3	2.4		
	4	2.0		
	5	3.4		
	6	3.1		
Number of People in Party			2.69*	3>2
	1	3.3		
	2	2.2		
	3	3.9		
	4	2.9		
	5	3.6		
	6	2.6		

^a*Significant at the .05 level.

Table 4. Results of crosstabulations of social background variables.

Variable	Chi Square	Lambda ^a	Degree of Freedom
Size of Community	14.8		20
Sex	5.8		5
Party Composition	29.1		20
Participation in Camping	2.7		5
Participation in Fishing	7.11		5
Participation in Horseback Riding	6.9		5
Participation in Hiking	6.0		5
Participation in Picnicking	4.0		5
Participation in Nature Study	16.9*	.07	5
Most Important Activity	20.2		20

^aPresented only when there was significance.

*Significant at the .05 level.

experience type category by only 7 percent. A visual inspection of the crosstabulation table indicates that experience groups 1, 2, and 6 participated in nature study much more often than experience groups 3, 4, and 5.

Resource Attributes

The 73 resource items clustered into eight groups labelled Fish Related, Rugged Topography, Intrusions, Wildlife, Rare or Unique Natural Features, Dense Vegetation, Meadows and Forests, and Water Related (Table 5). Most all of the clusters had reliability coefficients larger than 0.80, the sole exception being intrusions (0.69). The mean scores for all people on these clusters are also shown. When cluster scores are placed on the original rating scale Meadows and Forests added most strongly; Water Related, Wildlife, and Fish Related added strongly, Dense Vegetation, Unique Natural Features and Rugged Topography added moderately; Intrusions detracted moderately from satisfaction.

Relationships Among Experience Groups and Resource Attributes

Table 6 shows the mean scores ranked from highest to lowest for each experience group on the eight resource clusters. It can be seen that overall the rankings were not different. Of all six types, Type 6 had the most unique rankings. The Meadows and Forests related cluster is highest and Intrusions is lowest for all experience groups. Then, for groups 1 through 5, Water Related is ranked second, while in varying combinations Wildlife and Fish Related clusters were ranked third and fourth, and Unique Natural Features, Dense Vegetation, and Rugged Topography were ranked fifth, sixth, and seventh. The situation is only slightly different for Type 6, as Wildlife and Rugged Topography were ranked higher, and Fish Related and Water Related were ranked lower when compared to the other

Table 5. Eight resource clusters and their respective items identified from 222 Flat Tops Wilderness user respondents (summer, 1976).

Resource Attribute Clusters and Items	Reliability Coefficient	Cluster Mean Score ^a	Standard Deviation
Meadows and Forests	.8976	3.65	0.60
Mature virgin forests			
Alpine meadows			
Aspen groves			
Meadows among forest			
Lake views			
Water Related	.8673	3.26	0.65
Mountain springs			
Abundant sources of water			
Different sized streams			
Waterfalls			
Beaver dams, ponds			
Isolated lakes			
Drinkable mountain water			
Wildlife	.9226	3.08	0.82
Small furbearers			
Grouse			
Squirrels			
Song birds			
Ptarmigan			
Predatory birds			
Elk			
Mule deer			
Big horned sheep			
Fish Related	.8662	2.96	0.97
Brown trout			
Cutthroat trout			
Brook trout			
Rainbow trout			
Slow moving streams with deep holes			
Grayling			
Naturally reproducing fish populations			
Unique Natural Features	.9340	2.32	1.04
Wind sculptured rocks			
Fossil outcrops			
Rock towers			
Variety of rock types and minerals			
Unusually shaped rocks			
Caves			
Rock outcroppings			
Rare plants			
Indian artifacts			
Hot springs			

Table 5. Continued.

Resource Attribute Clusters and Items	Reliability Coefficient	Cluster Mean Score ^a	Standard Deviation
Rugged Topography	.9375	2.29	1.19
Steep terrain			
Steep terrain areas			
Steep gorges			
Boulder fields			
Areas above timberline			
Glaciers			
Snowfields			
Rugged Terrain			
Dense Vegetation	.8295	2.26	1.24
Areas with dense vegetation			
Dense stands of pine			
Streams lined with brush			
Intrusions	.6946	-2.00	1.37
Evidence of logging			
Evidence of mining			
Murky or discolored water			

^aA nine-point scale was used where +4 equalled most strongly added and -4 equalled most strongly detracted.

Table 6. The eight resource cluster rank ordered by mean scores for the six Flat Tops Wilderness user groups (summer, 1976).

User Groups	-----Eight Resource Clusters-----							
	Meadows and Forests	Water Related	Wildlife	Fish Related	Unique Natural Features	Rugged Topography	Dense Vegetation	Intrusions
1	1(3.96)	2(3.54)	3(3.44)	4(3.22)	5(2.65)	7(2.59)	6(2.63)	8(-2.09)
2	1(3.87)	2(3.42)	3(3.38)	4(3.10)	5(2.62)	6(2.57)	7(2.45)	8(-2.27)
3	1(3.69)	2(3.28)	3(3.08)	4(2.83)	7(2.35)	6(2.36)	5(2.39)	8(-1.96)
4	1(3.10)	2(2.76)	4(2.58)	3(2.67)	5(1.68)	7(1.40)	6(1.52)	8(-1.74)
5	1(3.50)	2(3.11)	4(2.93)	3(3.01)	5(2.15)	7(1.96)	6(2.15)	8(-1.80)
6	1(3.85)	3(3.50)	2(3.51)	5(3.05)	6(2.69)	4(3.12)	7(2.61)	8(-2.24)

five experience groups. However, the little difference found for group 5 between mean scores on the Wildlife and Water Related clusters and the Rugged Topography and Fish Related clusters indicate the rankings could have been different by chance.

Using Analysis of Variance and the Student-Newman-Keuls test, comparison was made of the resource cluster means for each experience group. Inspecting the F-Test values in Table 7, it can be seen that there were differences on all but the Fish Related and Intrusions clusters. However, there are few significant differences among the experience groups.

In all cases where there were significant F-values, Experience Group 4 was found to have a significantly lower score than groups 1, 2, 3, and 6, and in the Meadows and Forests and Water Related clusters was found to have a significantly lower score than Group 5. The only other significant differences were found on the cluster Meadows and Forests where Experience Group 1 had a significantly higher mean than Group 5, and on the Rugged Topography cluster where Group 6 had a significantly higher mean than Groups 3 and 5.

Another analysis involved examining the correlation between psychological outcome clusters and resource clusters for each of the experience groups (Table 8). Caution must be used in looking at these results. Given the number of correlations generated, it would be expected that a few are significant by chance alone. The results here should only be used for generating future hypotheses.

Achievement

The achievement outcome was found to correlate most often with the Water Related cluster, with some additional correlations between this outcome and the Rugged Topography and Wildlife Related clusters. It is interesting to note that experience groups 1, 2, and 6, which had the

Table 7. Means, significant F-values, and significant differences among experience groups for the resource clusters.

Resource Cluster	Experience Group	Mean	F-Value	Significant Differences
Water Related			8.839*	1,6,2,3,5>4
	1	3.54		
	2	3.42		
	3	3.28		
	4	2.76		
	5	3.11		
Meadows and Forests	6	3.50		
			13.499*	1>5>4/ 2,6,3>4
	1	3.96		
	2	3.87		
	3	3.69		
	4	3.10		
Rugged Topography	5	3.50		
	6	3.85		
			9.169*	6>3,4,5/ 1,2,3>4
	1	2.59		
	2	2.57		
	3	2.36		
	4	1.40		
Dense Vegetation	5	1.96		
	6	3.12		
			4.325*	1,6,2,3>4
	1	2.63		
	2	2.45		
	3	2.39		
	4	1.52		
Intrusions	5	2.15		
	6	2.61		
			.791	N/A
	1	-2.09		
	2	-2.27		
	3	-1.96		
	4	-1.74		
Wildlife	5	-1.80		
	6	-2.24		
			7.39*	6,1,2,3>4
	1	3.44		
	2	3.38		
	3	3.08		
	4	2.58		
	5	2.93		
	6	3.51		

Table 7. Continued.

Resource Cluster	Experience Group	Mean	F-Value	Significant Differences
Unique Natural Features			5.322*	6,1,2,3>4
	1	2.65		
	2	2.62		
	3	2.35		
	4	1.68		
	5	2.15		
	6	2.69		
Fish Related			1.470	N/A
	1	3.22		
	2	3.10		
	3	2.83		
	4	2.67		
	5	3.01		
	6	3.05		

*Significant at the .05 level.

3. Correlation among outcome clusters and resource clusters by experience types.

Experience Groups Outcome Value	RESOURCE CLUSTERS							
	Rugged Topography	Fish Related	Unique Nat. Feat.	Wildlife	Intrusions	Dense Vegetation	Water Related	Meadows and Forests
Management								
1 SA	.28*	-.06	.27	.35*	-.13	.35*	.41*	.21
2 SA	.34*	.44*	.16	.04	.00	.19	.44*	.27
3 MA	.25	-.01	.26	.35*	-.17	.12	.32*	.23
4 SIA	.22	.03	.24	.26	-.21	.26	.31*	.19
5 SIA	-.15	-.17	-.29	.30	.32	-.09	-.29	-.44*
6 SA	-.30	.29	-.45*	.05	-.07	-.12	.11	-.02
Observing People								
1 SIA	.04	.05	.23	.09	.19	.12	.02	.19
2 SIO	-.06	-.34*	.08	-.22	.17	-.25	-.35*	-.33*
3 SIA	.00	.01	-.23	-.01	.08	.17	-.13	.13
4 SIO	-.08	.04	-.11	-.07	.20	-.30*	-.29*	-.41*
5 SIA	.07	.41*	.23	.34	.06	.41*	.24	.22
6 MO	-.13	.27	-.20	-.13	.08	-.07	-.09	-.06
Working								
1 N	.40*	.16	.31*	.32*	.13	.08	.13	.27*
2 N	-.05	-.21	-.37	-.52*	.50*	-.12	-.16	-.23
3 N	.12	.04	.09	-.16	.39*	.03	-.07	-.21
4 N	.10	.08	.01	.00	.15	-.06	-.08	-.19
5 N	-.19	-.05	-.25	-.25	.16	-.12	-.08	-.08
6 SIA	.17	.22	.19	.23	.33	-.02	.01	.27
Recollection								
1 SA	-.08	-.39*	.07	.03	-.37*	.13	.23*	.12
2 SA	-.13	.15	.06	-.24	-.08	-.23	-.09	-.10
3 SA	.15	.39*	.08	.22	.22	.13	.20	.11
4 SIA	-.10	.10	.09	.02	-.32*	.08	-.11	.33
5 MA	-.46*	.36	.16	.22	-.44*	.13	.33	.24
6 SIA	.01	-.04	-.19	-.23	.02	-.35*	-.01	-.29
Reaction Personal								
1 MA	.24	.18	.55*	.35*	-.04	.34*	.26	.36*
2 SA	.30*	.13	.14	.35*	-.17	.46*	.41*	.53*
3 MA	.10	.04	.10	.06	-.06	.26	.06	.11
4 SIA	.25	-.19	.03	-.07	.06	.15	-.17	-.09
5 SIA	.40*	-.11	-.03	-.02	.23	.12	-.01	-.05
6 MA	.38*	-.38*	.46*	.09	.15	.07	.04	.11
Reaction Community								
1 SA	.51*	-.08	.26	.55*	-.33*	.20	.40*	.48*
2 SA	.08	.10	-.06	.12	-.13	.01	.31*	.05
3 MA	-.11	-.09	-.13	-.36	.14	-.16	-.31*	-.13
4 SIA	-.21	.13	-.13	-.21	.09	-.02	-.02	-.15
5 MA	-.19	.02	-.05	-.23	.23	-.15	-.19	-.09
6 SA	.33*	-.38*	.46*	-.33	.02	.11	.07	.27
Reaction with								
1 WSA	.15	-.05	.35*	.49*	-.18	.26	.57*	.63*
2 WSA	.08	.21	.29*	.16	-.11	-.03	.21	.20
3 SIA	.23	.16	.37*	.39*	-.53*	.24	.40*	.52*
4 MA	.24	-.03	.06	.04	-.22	.16	.11	.27*
5 SA	.32	.15	.21	.42*	-.13	.13	.32	.35*
6 WSA	-.43	.23	-.43*	.02	.22	.01	.17	.03

WSA=moderately strongly adds, SA=strongly adds, MA=moderately adds, SIA=slightly adds, N=neither adds nor detracts, NIA=neither adds nor detracts, MO=moderately detracts from satisfaction.

higher scores on the achievement cluster, had different patterns of relationships between this cluster and the resource clusters. Group 1 differs from Group 2 in that it had correlations with Wildlife and Dense Vegetation, while 2 had a correlation with Fish Related. Group 6 differs considerably from 1 and 2 in that it had only one negative correlation, that one being with Unique and Natural Features.

Meeting/Observing Other People

The Meeting/Observing Other People outcome cluster was correlated most often with the Fish Related, Dense Vegetation, Water Related, and Meadows and Forests clusters. Experience Group 1, which had the highest positive score on Meeting/Observing Other People, had no correlations. However, Group 5, which had a positive score on Meeting/Observing Other People, had two positive correlations, one with Fish Related, and one with Dense Vegetation. All other correlations were negative.

Risk Taking

The Risk Taking cluster was found to correlate very little with the resource clusters. It correlated most often with Wildlife and Intrusions. Experience groups 1, 2, and 3 all had positive scores on Risk Taking, with Group 1 correlating positively with Wildlife and group 2 correlating negatively with Wildlife. While it might be expected there would be strong correlations between Risk Taking and Topography, only one, with Group 1, was found.

Sharing/Recollection

The Sharing/Recollection cluster was found to correlate most often with Intrusions and Fish Related. Intrusions consistently correlated negatively, while Fish Related correlated negatively for Group 1 and

positively for Group 3. Group 1, which had the highest score on this outcome cluster, had only one positive correlation, with Water Related.

Reflection on Personal Values

The Reflection on Personal Values cluster correlated most often with the Topography cluster; it also correlated with the Unique and Natural Features, Wildlife, Dense Vegetation, and Meadow and Forests Related clusters. Experience groups 1 and 2, which had the highest scores on Reflection on Personal Values, had similar patterns of correlations with both correlating with Meadows and Forests, Dense Vegetation, and Wildlife. They differed, however, in that Group 1 correlated with the Unique and Natural Features cluster, and Group 2 correlated with the Topography and Water Related clusters.

Autonomy

The Autonomy cluster correlated most often with the Water Related, Topography, and Fish Related clusters. The pattern, however, is confusing as there is a mixture of positive and negative correlations. Groups 1, 2, and 6, which all had high scores on Autonomy, had several correlations with various resource clusters. Group 1 had the most, with 4 positive correlations (Topography, Wildlife, Water Related, and Meadows and Forests) and one negative correlation (Intrusions).

Relationships with Nature

The Relationships with Nature outcome cluster correlated most often with the Forest Related cluster, the Unique and Natural Features cluster, and the Water Related cluster. Observing the pattern of relationships, it can be seen that experience groups 1 and 3 have similar correlations, but that other groups have distinct correlations.

CONCLUSION

In this study we set out to explore the relationship among desired psychological outcomes from wilderness recreation experiences and the physical resource attributes of the wilderness. For the two psychological outcomes that appear most resource dependent based on their item content (Relationships with Nature and Achievement) there are significant correlations with certain resource attributes. Obtaining Relationships with Nature is related to the area's Meadows and Forests, Unique Natural Features, Wildlife, and Water Related Attributes. Obtaining opportunities for Achievement is related to the area's Water Related, Wildlife, and Rugged Topography attributes.

The groups of Flat Tops recreationists most dependent upon the condition of the physical resource are those with high scores on Relationships with Nature and Achievement. In general these are groups 1, 2, and 6.

The data are not as clear as desirable regarding the relationships among psychological outcomes and physical resource attributes. However, they do suggest that relationships do exist. Therefore, additional research in this area might prove productive.